since 1897. . .

LINGO

steel
aluminum
stainless steel
bronze

catalog no. 62

flagpoles

"A" Division

JOHN E. LINGO & SON • INC.

flagpoles by LINGO

1897

1927

1960

since 1897

the company

"A" Division and "B" Division are respectively the flagpole and radio products departments of John E. Lingo & Son, Inc., established 1897 at Camden, New Jersey in the hub of the famous industrial Delaware Valley, U.S.A. During 64 years of pole manufacturing experience, passed from father to son through four generations under the same family ownership and management, the Corporation has achieved an enviable reputation for high quality products and exceptional service. Tubular poles have been made for every conceivable type of installation and a wide variety of metals has been used. We have pioneered in developing many outstanding improvements and are responsible for most of the modern refinements in metal pole construction. Thousands of installations have been made and our products are in service in every State of the Union, all of the U. S. Possessions, and in over 60 foreign countries embracing every Continent.

quality of materials

New material only of the highest quality is used in the manufacture of every Lingo flagpole. All flagpoles and fittings are furnished to our exacting standards and no deviations are made in quality to attain lower cost. You are guaranteed that all pipe or tubing is new, full-weight and mill tested. Mill certificates or affidavits can be furnished whenever requested. The steel pipe or tubing utilized is seamless, furnished to us since 1921 by the National Tube Division of United States Steel Company, and has a tensile strength from 70,000 to 90,000 lbs. per sq. in.—considerably more than the tensile strength of ordinary steel pipe. The aluminum pipe or tubing used is also seamless, made by Alcoa, Kaiser & Reynolds. The seamless pipe and tubing has a perfectly smooth exterior surface, free from roll marks, and without welded seams. Your selection of a Lingo flagpole assures a high quality product designed by pioneer manufacturers and constructed by Union mechanics of long specialized experience.

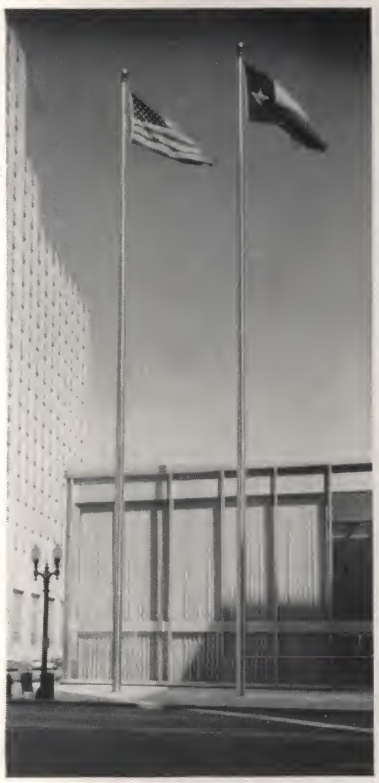
facilities

We have the largest plant in America specializing in the manufacture of flagpoles and fittings. Lingo is noted for its ability to produce highest quality metal flagpoles in the quickest possible time, regardless of height, diameter, or quantity. Under normal conditions, most sizes are carried in stock assuring immediate shipment. To produce genuine hydraulically bell-die swaged sectional steel flagpoles requires the use of an especially designed hydraulic swaging machine. Among the flagpole specialists, Lingo is the only manufacturer operating a bell-die swaging machine. Other products manufactured include antennas, antenna supporting masts, ship spars, lightning protection masts, etc.

service to architects and engineers

We want you to share the wealth of knowledge acquired by our 65 years of specialized experience by giving us the opportunity to study any problem you may have involving the use of tubular metal poles for any purpose. Our engineering staff will gladly prepare suggested details and specifications for flagpoles or antenna masts, etc., including cost estimates, all without charge or obligation on your part. Before specifying, if you will merely send a sketch of your contemplated installation, we will be pleased to make recommendations and offer valuable assistance to you in designing the best suited pole within your budget. Free consultation and advice on unusual pole problems are yours for the asking.

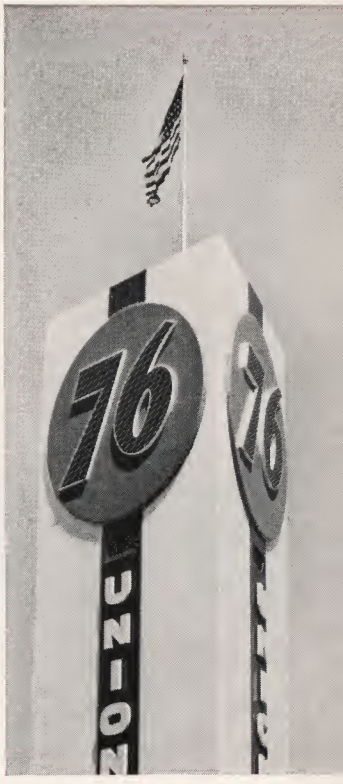
a LINGO *flagpole for every requirement*



GROUND SET FLAGPOLES

VERTICAL WALL SET FLAGPOLES

OUTRIGGER FLAGPOLES



ROOF SET FLAGPOLES

"A" Division

JOHN E. LINGO & SON • INC.

a — CONE TAPERED STEEL
The popular smooth surface flagpole

b — SWAGED SECTIONAL STEEL
The standard low cost flagpole

c — VENETIAN ENTASIS TAPERED
The ultimate in flagpole design

d — CONE TAPERED ALUMINUM
The modern low maintenance flagpole

e — CONE TAPERED ALUMINUM
with equipoise counter balanced tilting unit

a CONE TAPERED STEEL

These Popular Smooth Surface Flagpoles are machine-made, having an uninterrupted exterior surface throughout without offsets and resemble finished wood flagpoles in appearance. The tapered portion has ¼-in. minimum wall thickness with a UNIFORM CONICAL TAPER of approximately 1-in. in every 7.14 feet. The cylindrical butt portion is standard seamless steel pipe, having a wall thickness from ¼-in. to ½-in. depending upon diameter. Cone Tapered Steel Flagpoles should not be confused with our genuine Venetian Entasis tapered poles which have a curved taper or architectural entasis.

b SWAGED SECTIONAL STEEL

These Standard Low Cost Flagpoles are fabricated in consecutively diminishing sections of new, standard, full weight, seamless steel pipe with swaged-shrunk and telescoped joints. All joints are made without use of pins, bolts, rivets, screw couplings or lead calking. Poles over 30 feet in overall length are usually shipped in sections with telescoping field joints in order to obtain lowest possible freight cost. NO FIELD WELDING IS NECESSARY.

c VENETIAN ENTASIS TAPERED

These special made flagpoles are the ultimate in flagpole design and are produced in steel, stainless steel and bronze. They have a smooth uninterrupted exterior surface throughout without joints or offsets and HAVE A CURVED TAPER OR ARCHITECTURAL ENTASIS. These poles are especially suitable for memorials, monuments and all buildings of exceptional architectural value where an unusual flagpole installation is desired to properly harmonize with the outstanding design of the project.

d CONE TAPERED ALUMINUM

These Modern Low Maintenance Flagpoles are machine-made of Alcoa 6063-T6 seamless extruded aluminum having smooth uninterrupted exterior surface throughout. Tapered portion has UNIFORM CONICAL TAPER of approximately 1-in. in every 5.5 feet and pole has wall thickness from .188-in. to .375-in. depending upon diameter. Poles have centerless 80-grit satin finish, waxed, and no painting is recommended or required. Occasional halyard rope replacement is only maintenance cost.

e CONE TAPERED ALUMINUM TILTING

These flagpoles are the same as our stationary, non-tilting cone tapered aluminum flagpoles except that the pole is equipped with an all-steel "Equipoise" counter-balanced tilting unit. They can be speedily lowered and raised by one man whenever necessary. The tilting poles are more costly than stationary poles and are recommended only for installation at sites where experienced flagpole climbers or steeplejacks cannot be readily obtained to replace broken halyard rope.

facts regarding types of tapered flagpoles

Architects have become so confused, as the result of inconsistencies in advertising by flagpole manufacturers, that we devote this space to the facts concerning the development of tapered metal flagpoles, so that the Architect will have a clearer understanding as to the various types.

In 1912 the first smooth surface tapered steel flagpole was constructed utilizing standard steel pipe in the straight cylindrical butt portion and surmounted by a conical or straight tapered portion made from steel plates, rolled to circular shape, longitudinally welded and joined together by circumferential welds. These poles were called Continuous Taper Welded Flagpoles to denote the smooth exterior surface, the method of manufacture and to differentiate from Swaged Sectional flagpoles. Rolling facilities first limited the pole top diameter to large proportions but smaller top diameters were finally attained by decreasing the thickness of the rolled plate. Conicality in the tapered portion was initially produced, but as many Architects preferred a curved convex taper, the conical or straight taper was soon abandoned and the Venetian Entasis taper developed. The poles were purposely tapered through the upper approximately ⅔ only of the exposed length to provide greater strength and to overcome the optical illusion of central diminution often observed in a pole tapering throughout the entire exposed length. However, the rolled plates in the tapered portion were difficult to form to a reasonably round shape and the relatively light wall thickness was inadequate for long life with complete safety.

To overcome these obstacles we perfected in 1923 and later patented a greatly improved method of manufacturing tapered poles in various metals whereby the use of rolled plate construction would be avoided, the entire pole would be made with a heavy wall thickness equal to standard pipe and adequate roundness would be assured. These poles when first advertised were known as Continuous Tapered Flagpoles to indicate no visible joints or offsets and had a curved taper in the tapered portion. The same approximately ⅓ straight cylindrical butt portion was provided and the taper was in the upper approximately ⅔ of the pole. This tapering method is still employed by us in the production of Genuine Venetian Entasis Tapered Flagpoles in steel, stainless steel and bronze.

In 1936 we first introduced to Architects a new line of machine-made, lower cost, tapered steel flagpoles each having a seamless steel cylindrical butt portion with wall thickness corresponding to standard pipe surmounted by a conical tapered (straight tapered) steel portion having a minimum wall thickness of ¼-in. and a uniform taper of approximately 1" in each 7.14 feet. They were initially presented as Continuous Straight Tapered Steel Flagpoles to describe the type of taper in the tapered portion but have since been more briefly titled Cone Tapered Steel Flagpoles.

Another line of Cone Tapered Aluminum Flagpoles was initiated by us in 1950. These poles are of machine-made, all-seamless aluminum construction with a wall thickness from .188-in. to .375-in. depending upon diameter and the conical tapered (straight tapered) portion has a uniform taper of approximately 1" in each 5.5 feet.

In summary, conventional Continuous Tapered flagpoles are those made with a smooth uninterrupted exterior surface throughout, without graduations or offsets, each comprising a straight cylindrical butt portion surmounted by a tapered portion which has either one of two different types of taper: 1. A uniform straight conical taper such as in Cone Tapered, Conical Tapered and Continuous Straight Tapered flagpoles, all of which are identical. A true Conical Tapered pole, as the name implies, cannot have a curved taper or architectural entasis. 2. A non-uniform curved taper such as in genuine Venetian Entasis Tapered flagpoles or in any pole that actually tapers with architectural entasis. Entasis tapered poles cannot have a conical or straight taper.

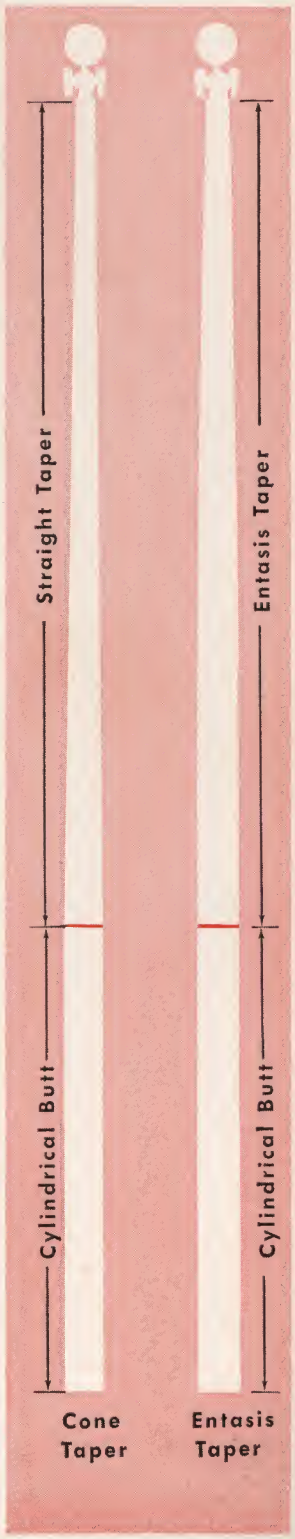


table of contents

important notice

This catalog has been prepared especially for Architects, Engineers and flagpole purchasers with the intent that it will be the most informative, dependable, honest and complete guide of its kind in the field.

Full specifications are given. There are no deliberate omissions! All tables of dimensions and specifications give complete pertinent information. The various types of flagpoles are properly titled, illustrated and described. There are no misnomers! Exact pole wall thicknesses, properly calculated tapered portions, etc. are shown. There are no intentional missing dimensions or purposeful specification deletions! All designs have been carefully developed and are equal to or above the minimum consistent with good engineering practice. The products are made precisely as advertised. There is no deception or misrepresentation! All shipping weights shown have been carefully estimated, proven by actual shipments and represent the correct weights. The basic steel and aluminum used in our flagpoles are made principally by U.S. Steel, Alcoa, Kaiser and Reynolds who have no subsidiaries in the flagpole field and are not combined with any flagpole manufacturer.

All material used in Lingo Flagpoles is guaranteed to be new, unused, mill-tested and of recent manufacture. We will gladly ship any of our steel flagpoles with a shop coat of transparent varnish applied to permit visual inspection in the field for quality of material furnished and will always permit the Architect's representative to shop inspect and physically analyze the material during fabrication. Our steel flagpoles are shipped without a plate seal at bottom which permits interior inspection of pole in the field.

It pays to know the manufacturer before specifying! "LINGO" Flagpoles are the universally recognized standard where high quality is desired. Inherent in our products are 65 years experience, manufacturing integrity and ethical business methods. We will allow no compromise in materials, design and workmanship because we are interested in ultimate customer satisfaction, on quality before volume and complete honesty in all our dealings.

Architects and Engineers can specify with confidence if their choice is "LINGO" because they get the product made exactly as they have specified it. Emphasis is placed on prompt, courteous, highly-personalized service to your problem. If any question arises not covered herein, we suggest you consult us. You will get a quick intelligent answer.

section 1

LINGO
GROUND SET
flagpoles

- CONE TAPERED STEEL
- SWAGED SECTIONAL STEEL
- VENETIAN ENTASIS TAPERED
- CONE TAPERED ALUMINUM
- CONE TAPERED ALUMINUM TILTING
- DOUBLE-MAST NAUTICAL TYPE
- FOUNDATION DETAILS
- MISCELLANEOUS FITTINGS

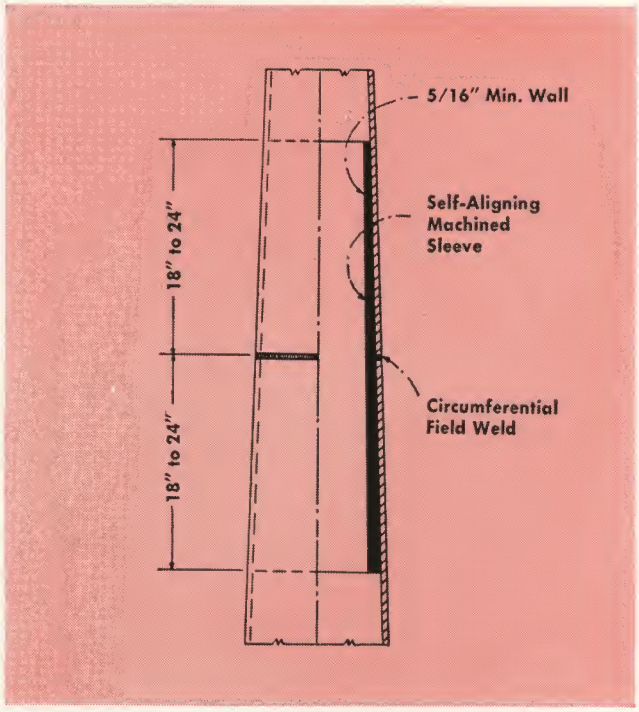
Two 116½-ft. long Genuine Venetian Entasis Tapered Stainless Steel Flagpoles
First National Bank Building
Houston, Texas
Architects: Skidmore, Owings & Merrill

CONE TAPERED STEEL *flagpoles*

description

These MACHINE-MADE Continuous Straight Tapered steel flagpoles have a smooth uninterrupted exterior surface throughout, without visible joints or offsets. The ¼-in. minimum wall thickness tapered portion has a UNIFORM STRAIGHT LINE CONICAL TAPER (SEE ILLUSTRATION ON PAGE 5) of approximately 1-in. in every 7.14 feet, making a long graceful taper. The cylindrical butt portion is standard seamless steel pipe, having a wall thickness from ¼-in. to ½-in., depending upon the diameter. These machine-made Cone Tapered steel flagpoles are less costly and should not be confused with our genuine special-made Venetian Entasis Tapered poles described on page 12, which have an architectural entasis or curved taper. Cone Tapered poles are more costly than the Swaged Sectional steel poles shown on page 10. Cone Tapered steel poles up to 65 feet in length can be shipped via railroad freight in one piece without field joints but a substantial saving in freight cost is possible if poles over 40'6" long are shipped via motor freight in two pieces. In that case, pole is arranged with special designed internal splicing sleeve so that erector need only push the two sections together, weld a small circumferential pass around the joint and grind the weld smooth, making the field joint invisible. The seamless steel, machined-turned, precision-made, self-aligning internal splicing sleeve assures perfect field alignment and eliminates the necessity of field plug welds, aligning bolts, shims, etc.

typical field joint detail



note to specification writer

Whenever open specifications are required, insert "or equal" after our name in the specification, and add the following paragraph:

The articles furnished under these specifications shall be new, unused, of recent manufacture, and the product of a recognized reputable manufacturer specializing in flagpoles. The manufacturer must guarantee that all pipe and tubing is new, full weight and mill tested. The manufacturer, if required, must submit mill certificates or affidavits attesting to the use of new material; allow the pole to be shop inspected and physically analyzed during fabrication by the Architect's representative, and agree, if requested, to ship pole coated only with transparent varnish for field inspection.

specifications

Flagpole—Furnish and erect, where shown on plans, a cone tapered steel flagpole, complete with all standard fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, N. J. and install concrete foundation in accordance with their standard details. Flagpole to be ground set (Heavy Type) (Standard Type) (Superstandard Type) with ..... feet exposed height above ground by ..... feet total length. Outside diameter of pole butt shall be ..... inches, tapered length shall be ..... feet and outside diameter of pole top shall be ..... inches.

Flagpole Construction—Tapered portion of flagpole shall have a wall thickness of not less than ¼-in. and the uniform conical taper shall be 1-in. in approximately every 7.14 ft. Cylindrical butt portion of pole shall be seamless steel and shall have wall thickness corresponding to standard full weight pipe. The joint between cylindrical butt and tapered portion shall not be discernible and pole shall have a smooth uninterrupted exterior surface throughout without visible joints or offsets. Flagpole shall be shipped in one piece without field joints, unless a substantial saving in freight cost is possible by a two piece shipment. If pole is shipped in two pieces a precision-made, self-aligning, seamless steel internal splicing sleeve must be provided for the field joint of a type requiring no plug welds, shims or bolts for field alignment. Sleeve shall be at least 36 inches long extending 18 inches each side of section abutment. Portion of sleeve in top of lower shipping section shall be securely shop welded. Portion of sleeve extending into bottom of upper shipping section in field shall be machine-turned and self-aligning to provide snug fit. Minimum wall thickness of sleeve after machining shall be 5/16-in. After sections are pushed together in field a circumferential weld shall be made at the section abutment and weld shall be ground smooth to make field joint invisible. A field joint arrangement requiring field plug welds or bolts or shims for field alignment of pole sections will not be acceptable.

specifications (continued)

Flagpole Fittings—(Please copy specifications from page 26 for ball, truck, cleats, halyards and swivel snaps.)

Foundation Tube—Provide a steel foundation tube made of (16 ga. galvanized corrugated steel) (standard seamless steel pipe) of length and diameter for this size pole, in accordance with type (I) (II) (IIA) (III) of this manufacturer. Include painted welded steel bottom plate, lower steel-welded internal centering wedges, steel lightning ground spike and steel plate support, as detailed. Inside diameter of foundation tube shall be about 3-in. larger than outside butt diameter of flagpole.

Ground Protector—(To be omitted if metal base or flash collar is specified.) Provide a steel ground protector one pipe size larger than the butt diameter of the flagpole, extending 12-in. above ground and 6-in. below ground, shrunk to flagpole, and having neatly welded bevels at both ends.

Painting—After fabricating pole, all exterior surfaces shall be thoroughly cleaned to bare metal and one shop coat of red lead and oil applied, followed by two field coats of white lead and oil.

Note: If metal base is desired (see pages 22 & 23), omit ground protector from specifications and indicate exact design number and metal of base required. For recommended foundation dimensions and types of foundation tube arrangements, please see pages 24 & 25.

dimensions

Exposed Height —ft.	Setting Depth —ft.	Total Length —ft.	Outside Diameter —inches			Weight—Pole & Ground Protector only —lbs.	Tapered Portion —ft.	Tapered Wall —in.	Cylindrical Butt —ft.	Cylindrical Wall —in.
			Butt	Top	Ball					
HEAVY TYPE										
25	3	28	5	3¼	5	395	12½	.250	15½	.247
30	3	33	5	3¼	6	460	12½	.250	20½	.247
35	3½	38½	5⅝	3¼	6	610	16½	.250	22	.258
40	4	44	6	3¼	6	730	19½	.250	24½	.250
50	5	55	6⅝	3¼	8	1040	24	.250	31	.280
60	6	66	7⅝	3¼	8	1435	31¼	.250	34¾	.301
70	7	77	8⅝	3¼	8	2125	38½	.250	38½	.322
75	7½	82½	9⅝	3¼	10	2460	45½	.250	37	.342
80	8	88	10¾	3¼	10	2850	53½	.250	34½	.365
90	9	99	11¾	3½	10	3550	58¾	.250	40¼	.375
100	10	110	12¾	3½	10	4300	66	.250	44	.375
STANDARD TYPE										
20	3	23	5	3¼	5	325	12½	.250	10½	.247
25	3	28	5⅝	3¼	6	425	16½	.250	11½	.258
30	3	33	6	3¼	6	530	19½	.250	13½	.250
35	3½	38½	6⅝	3¼	6	690	24	.250	14½	.280
40	4	44	7⅝	3¼	8	870	31¼	.250	12¾	.301
50	5	55	8⅝	3¼	8	1235	38½	.250	16½	.322
60	6	66	10¾	3¼	10	1890	53½	.250	12½	.365
70	7	77	11¾	3¼	10	2400	60½	.250	16½	.375
75	7½	82½	12¾	4	12	2850	62½	.250	20	.375
80	8	88	14	4	12	3475	71½	.250	16½	.500
90	9	99	14	4	14	4275	71½	.250	27½	.500
100	10	110	16	4	14	5000	85¾	.250	24¼	.500
SUPERSTANDARD TYPE										
30	3	33	6⅝	3¼	6	580	24	.250	9	.280
35	3½	38½	7⅝	3½	8	765	29½	.250	9	.301
40	4	44	8⅝	4	8	1025	33	.250	11	.322
45	4½	49½	9⅝	4½	8	1300	36½	.250	13	.342
50	5	55	10¾	5	10	1625	41	.250	14	.365
60	6	66	11¾	5½	10	2245	44½	.250	21½	.375
65	6½	71½	12¾	5½	12	2665	51¾	.250	19¾	.375
70	7	77	14	5½	12	3300	60¾	.250	16¼	.500
75	7½	82½	14	5½	14	3700	60¾	.250	21¾	.500
80	8	88	16	6	14	4150	71½	.250	16½	.500
90	9	99	18	6½	14	5100	82	.250	17	.500
100	10	110	20	6½	14	6600	96	.250	14	.500

typical installation

60-ft. High Standard Type Cone Tapered
Steel Flagpole
Milliron's Dept. Store
Los Angeles, Calif.

Architects: Gruen & Krummerk, Victor Gruen, A.I.A. Hollywood

59-ft. High Superstandard Type
Cone Tapered Steel Flagpole
The Chemstrand Corporation
Decatur, Alabama

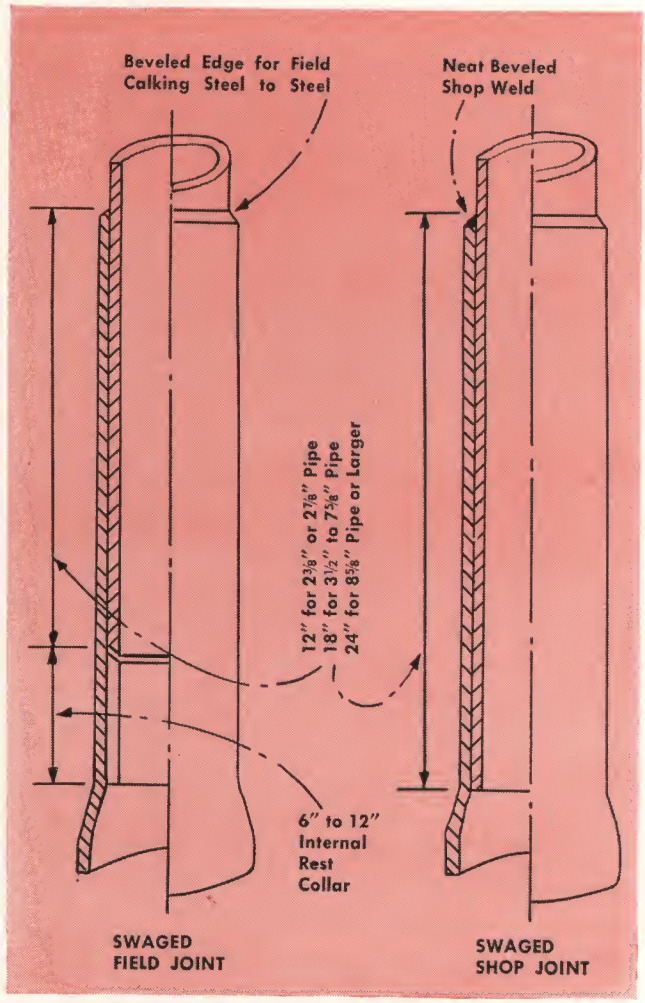
Architects: Lockwood Greene Engineers, Inc., New York City

SWAGED SECTIONAL *flagpoles*

description

These flagpoles are fabricated by joining consecutive diminishing sections of new, standard, full-weight, "National" seamless steel pipe, having a tensile strength from 70,000 to 90,000 lbs. per sq. in., with joints either of the shop type (swaged-shrunk and telescoped) or of the field type (swaged, telescoped and self-aligning). The poles are designed to safely withstand wind velocities from 90 to 120 M.P.H. depending upon diameter pole selected. All shop and field joints are made without the use of bolts, pins, rivets, screw couplings, lead calking and field welding. All sections are genuinely, hydraulic bell-die swaged (not merely torch-cut, formed and welded) wherever the normal space between two standard pipe sections requires a reduction in the outside diameter of the outer pipe to provide a shrunk or close telescoping fit. These poles are usually shipped by motor freight in sections not exceeding 30 feet. When necessary to ship by railroad freight the shipping sections may be shorter than 30 feet in order to obtain the lowest possible freight cost or longer to reduce the number of shipping sections, depending upon length and weight of pole selected (see table of dimensions). FIELD WELDING IS NOT NECESSARY DUE TO CLOSE TELESCOPING FIT AT FIELD JOINTS. The erector merely pushes the sections together until they seat on the internal rest collars and then makes the field joints airtight and watertight by calking the beveled edge of the outer pipe with an ordinary hammer and calking chisel, the latter furnished by us. In fabricating our swaged sectional flagpoles we utilize all standard full-weight pipe sizes consecutively from top to bottom of pole having outside diameters as follows: 2⅜", 2⅞", 3½", 4", 4½", 5", 5⁹⁄₁₆", 6⅝", 7⅝", 8⅝", 9⅝", 10¾", 11¾", 12¾", 14" and 16". The latter two sizes have ½" wall. Note that the so-called "odd" standard sizes are included such as 4" OD, 5" OD, 7⅝" OD, 9⅝" OD and 11¾" OD. If any of these "odd" standard sizes are omitted, there are unsightly heavy swages or offsets between joints and the fewer pipe sections than standard result in longer individual pipe lengths, greater deflection characteristics and less bending resistance. By including these "odd" standard sizes in our swaged sectional flagpoles, the joints are inconspicuous and the poles have maximum rigidity and strength.

typical joint details



specifications

Flagpole—Furnish and erect, where shown on plans, a hydraulic bell-die swaged sectional steel flagpole, complete with all standard fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, N. J. and install concrete foundation in accordance with their standard details. Flagpole to be (Light Pattern) (Heavy Pattern) (Extra Heavy Pattern) with . . . . feet exposed height above ground by . . . . feet total length. The outside butt diameter of the pole shall be . . . . inches and the outside top diameter of the pole shall be . . . . inches. The pole shall be made in . . . . sections and shipped in . . . . pieces.

Flagpole Construction—Flagpole to be fabricated in sections of new, standard, full-weight, mill tested, seamless steel pipe. All joints shall be of the telescoping type, made without the use of bolts, pins, rivets, screw couplings and lead calking. All joints shall be genuinely die-swaged, where necessary, to produce close fit. Shop joints must be die-swaged or hot shrunk without inside bushings. Field joints must be die-swaged for close telescoping fit and self alignment of inserted section. Field joints must be of type requiring no field welding. Pole shall be made in consecutively diminishing sections of standard pipe without omitting "odd" standard pipe sizes. All joints must be as inconspicuous as possible and heavy swages or offsets, resulting from the omission of "odd" standard pipe sizes, will not be permitted.

specifications (continued)

Flagpole Fittings—(Please copy standard specifications from page 26 for ball, truck, cleats, halyards and swivel snaps.)

Foundation Tube—Provide a steel foundation tube made of (16-ga. galvanized corrugated steel) (standard seamless steel pipe) of length and diameter for this size pole, in accordance with Type (I) (II) (IIA) (III) of this manufacturer. Include painted welded steel bottom plate, lower steel welded internal centering wedges, steel lightning ground spike and steel plate support, as detailed. The inside diameter of the foundation tube shall be about 3-in. larger than the outside butt diameter of the flagpole.

Ground Protector—(To be omitted if metal base or flash collar is specified.) Provide a steel ground protector, one standard pipe size larger than the butt diameter of the flagpole, extending 12-in. above ground and 6-in. below ground, shrunk to flagpole, and having neatly beveled welds at both ends.

Painting—(Please copy similarly titled specification paragraph from page 8.)

Note: If metal base or flash collar is desired (see pages 22 & 23) indicate exact design number and metal of base required and omit ground protector from specifications as it then serves no useful purpose. For recommended foundation dimensions and types of foundation tube arrangements please see pages 24 & 25. If open specifications are required please see note on page 8.

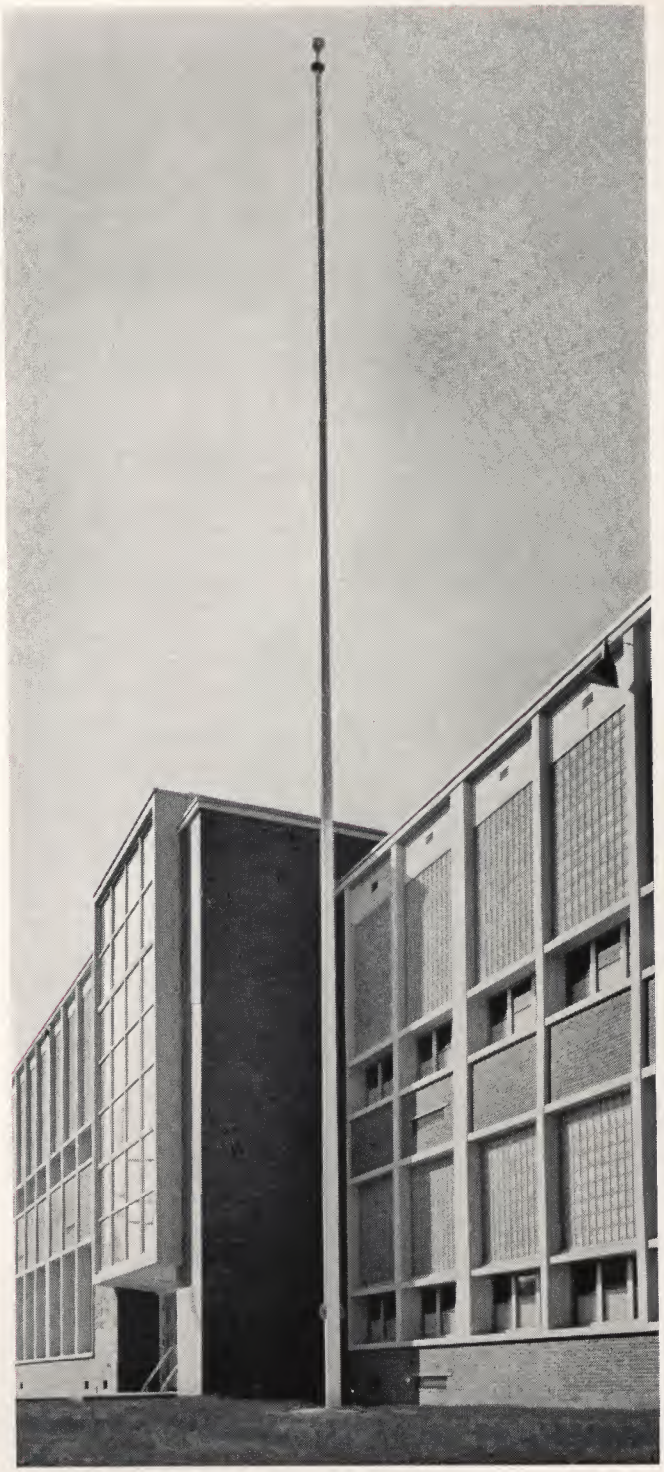
dimensions

Exposed height, ft.	Setting depth, ft.	Total length, ft.	Outside diameter, in.			Weight—Pole & Ground Protector only — lbs.	Sections		
			Butt	Top	Ball		Total in pole	Shipping	
								Truck	Rail
LIGHT PATTERN									
15	2	17	3½	2⅜	4	133	3	1	1
20	3	23	3½	2⅜	5	164	3	1	1
25	3	28	4	2⅜	5	244	4	1	2
30	3	33	4½	2⅜	6	330	5	2	2
35	3½	38½	4½	2⅜	6	395	5	2	2
40	4	44	5	2⅜	6	515	6	2	3
45	4½	49½	5	2⅜	8	576	6	2	3
50	5	55	5⅝	2⅜	8	727	7	2	3
60	6	66	6⅜	2⅜	8	991	8	3	4
70	7	77	7⅛	2⅜	8	1313	9	3	4
75	7½	82½	8⅜	2⅜	10	1620	10	4	3
80	8	88	9⅛	2⅜	10	2032	11	4	3
90	9	99	10¾	2⅜	10	2509	12	4	3
100	10	110	11¾	2⅜	10	3094	13	5	4
HEAVY PATTERN									
20	3	23	4	2⅞	5	214	3	1	1
25	3	28	4½	2⅞	5	307	4	1	2
30	3	33	5	2⅞	6	405	5	2	2
35	3½	38½	5	2⅞	6	480	5	2	2
40	4	44	5⅝	2⅞	6	617	6	2	3
45	4½	49½	5⅝	2⅞	8	687	6	2	3
50	5	55	6⅜	2⅞	8	914	7	2	3
60	6	66	7⅜	2⅞	8	1223	8	3	4
70	7	77	8⅜	2⅞	8	1606	9	3	3
75	7½	82½	9⅛	2⅞	10	1988	10	4	3
80	8	88	10¾	2⅞	10	2459	11	4	3
90	9	99	11¾	2⅞	10	3002	12	4	3
100	10	110	12¾	2⅞	12	3643	13	5	4
125	12	137	14	3½	14	5804	13	7	4
EXTRA HEAVY PATTERN									
25	3	28	5	3½	5	372	4	1	2
30	3	33	5⅝	3½	6	482	5	2	2
35	3½	38½	6⅜	3½	8	654	6	2	2
40	4	44	7⅜	3½	8	948	7	2	3
45	4½	49½	7⅜	3½	8	1039	7	2	3
50	5	55	8⅜	3½	8	1329	8	2	3
55	5½	60½	9⅛	3½	8	1700	9	3	2
60	6	66	10¾	3½	10	2109	10	3	2
65	6½	71½	10¾	3½	10	2258	10	3	2
70	7	77	11¾	4	10	2785	10	3	3
75	7½	82½	12¾	4	12	3194	11	4	3
80	8	88	12¾	4	12	3404	11	4	3
90	9	99	14	4	14	4282	12	4	3
100	10	110	16	4	14	5402	13	5	4

typical installation

100-ft. High Heavy Pattern
Swaged Sectional Steel Flagpole
University of California
Los Angeles, California

Architect: University of California, Dept. of Grounds & Buildings



60-ft. High Heavy Pattern
Swaged Sectional Steel Flagpole
Casper W. Sharples Junior High School
Seattle, Wash.

Architects: Mallis and De Hart, Seattle

GENUINE VENETIAN ENTASIS TAPERED *flagpoles*

description

These special-made genuine Venetian Entasis tapered flagpoles are the ultimate in flagpole design and are recommended for memorials, monuments and all buildings of exceptional architectural value where an unusual flagpole installation is desired to best harmonize with the outstanding design of the project. The poles have a smooth uninterrupted exterior surface throughout, without visible joints or offsets and are made to order only, in steel, stainless steel, bronze, etc. Unlike Cone Tapered, Conical Tapered or Continuous Straight Tapered flagpoles which have a uniform straight line conical taper in the tapered portion, our Venetian Entasis tapered flagpoles have a curved taper or architectural entasis taper as precisely detailed in Table 2 and as illustrated. They are standardized in exposed lengths from 20 feet to 100 feet as shown in Table 1. The wall thickness varies from .226-in. minimum to .500-in. maximum, depending upon diameter. Steel poles of this type up to 33 feet in length are shipped in one piece without field joints. If the steel pole is over 33 feet in length, a substantial saving in freight cost is possible by arranging the pole for shipment in two pieces with a self-aligning internal splicing sleeve located in the cylindrical butt portion of the pole and requires only minor field welding and grinding. However, field joint arrangements in stainless steel or bronze poles are not recommended and stainless steel or bronze poles are shipped in one piece only regardless of length.

In order to acquaint the Architect with the difference between a genuine special-made Venetian Entasis tapered pole and a less costly machine-made Cone Tapered, Continuous Straight Tapered or Conical Tapered pole, we illustrate in Fig. 1 the two tapers. The contour of the Venetian Entasis taper is similar to the world-renowned columns at St. Mark's Cathedral, Venice, Italy. There is shown in Table 2 the entasis stations and respective pole diameters used by us to produce the nearest possible approach to a true Venetian Entasis. Only by strict conformance to these dimensions can this curved, architectural Venetian Entasis taper be achieved.

DO NOT BE MISLEAD! A conical tapered pole as the name implies, cannot have a curved taper. Any tapered pole having a conical or uniform or straight taper is NOT an Entasis Tapered pole. If an Entasis Tapered pole is desired, definitely specify that the

description (continued)

pole shall be a Genuine Venetian Entasis Tapered pole having curved architectural entasis, NOT conical or straight tapered, with exact diameters at respective entasis stations as shown in Table 2. The Architect should insist that the pole manufacturer submit shop drawings for approval prior to fabrication of the pole. Any shop drawing should be disapproved that does not show the pole diameter at each entasis station, as indicated in Table 2. Furthermore, the Architect should have his field representative carefully check the pole as finally delivered, before erection, to determine whether it has been fabricated exactly as required. Only in these ways can the Architect be assured that the pole is of the Genuine Venetian Entasis Tapered type.

The dimensions shown in Tables 1 and 2 are basically for steel flagpoles but may also be used for stainless steel and bronze flagpoles in Venetian Entasis Tapered construction. Stainless steel and bronze flagpoles can also be especially produced in Cone Tapered construction.

specifications

Flagpole—Furnish and erect, where shown on plans, a genuine Venetian Entasis Tapered (steel) (stainless steel) (bronze) flagpole, complete with all standard fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, New Jersey, and install concrete foundation, etc., all as detailed. Flagpole shall be (Standard Pattern) (Extra Heavy Pattern) with . . . feet height above ground by . . . feet total length. Outside diameter of pole butt shall be . . . inches, entasis tapered portion shall be . . . feet and outside diameter at top shall be . . . inches.
Flagpole Construction (for steel pole)—The cylindrical butt portion of the flagpole shall be seamless steel having a wall thickness corresponding to standard full weight pipe. The Venetian Entasis tapered portion of the pole shall have curved architectural entasis, not conical tapered, not straight tapered and not cone tapered. The tapered portion shall have wall thickness, outside diameters at respective entasis stations, etc. in strict accordance with the published standards of "A" Division of John E. Lingo & Son, Inc. Any shop joints necessary in the fabrication of the pole shall not

figure 1

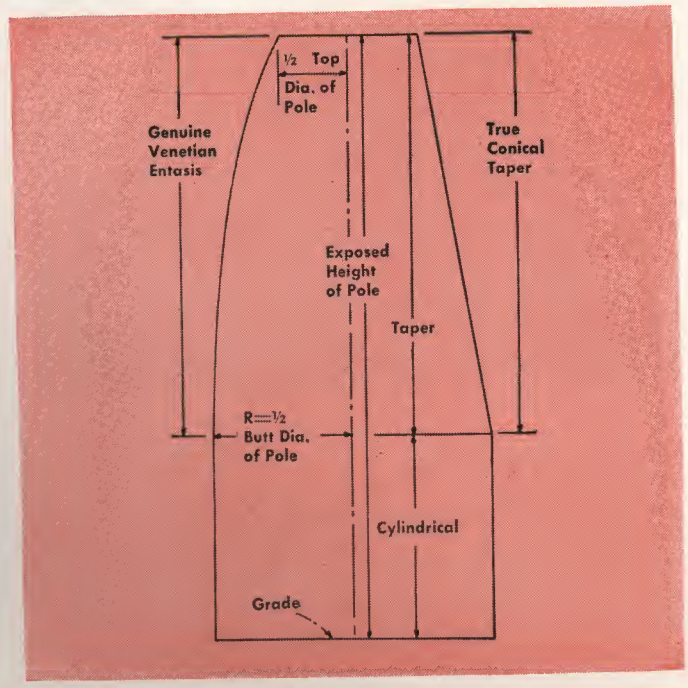


table 1

Exposed height — ft.	Setting depth — ft.	Total length — ft.	Outside Diameter In Inches: Butt	Top	Ball	Bare Pole Weight — lbs.	Tapered portion — ft.	Tapered wall — in.	Cylindrical butt portion — ft.	Cylindrical wall — in.
STANDARD PATTERN										
20	3	23	4	2	5	207	13	.226	10	.226
25	3	28	4½	2½	5	296	17	.237	11	.237
30	3	33	5	3	6	413	20	.247	13	.247
35	3½	38½	5⅝	3	6	522	23	.258	15½	.258
40	4	44	6⅝	3½	8	827	25	.280	19	.280
45	4½	49½	7⅝	3½	8	1104	30	.301 x .258	19½	.301
50	5	55	8⅝	3½	8	1423	35	.322 x .280	20	.322
60	6	66	9⅝	3½	10	2049	40	.342 x .301	26	.342
65	6½	71½	10¾	4	10	2661	45	.365 x .301	26½	.365
70	7	77	11¾	4	10	3282	45	.375 x .301	32	.375
75	7½	82½	12¾	4	12	3647	50	.375 x .301	32½	.375
80	8	88	14	4	12	5145	55	.500 x .301	33	.500
90	9	99	14	4	14	6143	60	.500 x .301	39	.500
100	10	110	16	4	14	7945	65	.500 x .301	45	.500
EXTRA HEAVY PATTERN										
20	3	23	5	3	5	272	13	.247	10	.247
25	3	28	6	3	6	417	17	.250	11	.250
30	3	33	6⅝	3½	6	621	20	.280	13	.280
35	3½	38½	7⅝	3½	8	894	23	.301 x .258	15½	.301
40	4	44	8⅝	4	8	1207	25	.322 x .280	19	.322
45	4½	49½	9⅝	4	8	1602	30	.342 x .301	19½	.342
50	5	55	10¾	4½	10	2045	35	.365 x .322	20	.365
60	6	66	11¾	4½	10	2809	40	.375 x .322	26	.375
65	6½	71½	12¾	5	12	3096	45	.375 x .342	26½	.375
70	7	77	14	5	12	4548	45	.500 x .342	32	.500
75	7½	82½	14	5	14	5058	50	.500 x .342	32½	.500
80	8	88	16	5	14	6161	55	.500 x .342	33	.500
90	9	99	18	5	14	8375	60	.500 x .3 2	39	.500
100	10	110	20	5	14	9954	65	.500 x .342	45	.500

specifications (continued)

be discernible and the pole shall have a smooth uninterrupted exterior surface throughout without visible joints or offsets. The flagpole shall be shipped in one piece without field joints, unless a substantial saving in freight cost is possible by a two-piece shipment. If pole is shipped in two pieces a precision-made, self-aligning, steel internal splicing sleeve must be provided for the field joint of a type requiring no plug welds, shims or bolts for field alignment. The field joint shall be located in the cylindrical butt portion of the pole and the splicing sleeve shall be at least 36 inches long extending 18 inches each side of section abutment. Portion of sleeve in top of lower shipping section shall be securely shop welded. Portion of sleeve for extending into bottom of upper shipping section in the field shall be machine-turned and self-aligning to provide snug fit. Minimum wall thickness of sleeve after machining shall be 5/16-in. After pole sections are pushed together in the field a circumferential weld shall be made at the section abutment and weld shall be ground smooth to make field joint invisible. A field joint arrangement requiring field plug welds or bolts or shims for field alignment of pole sections will not be acceptable.

Flagpole Fittings—(for steel pole)—Note To Specification Writer: Please copy specifications from page 26 for ball, truck, cleats, halyards and swivel snaps. Please also copy specifications from page 8 for foundation tube, ground protector or metal base.

Painting (for steel pole only)—Note to Specification Writer: Please copy painting specifications from page 8.

Flagpole Construction & Fittings (for stainless steel pole)—Note To Specification Writer: Please copy steel pole construction specifications as outlined above except substitute words "stainless steel" wherever word "steel" appears. Also omit all reference to field joint and splicing sleeve arrangement inasmuch as stainless steel poles are shipped in one piece only regardless of length. The same flagpole fittings specifications should be copied as indicated for steel poles above with certain exceptions. All reference to painting and ground protector should be omitted. Specify that stainless steel flagpole shall have #4 finish. Specify ball ornament to be supplied in spun stainless steel having flush seam and with stainless steel rod. Truck, cleats and metal base should be specified in Monel-S metal (similar to stainless steel). Bronze swivel snaps should be specified to have chrome-plated finish. The foundation tube should be specified as steel, not stainless steel.

Flagpole Construction & Fittings (for bronze pole)—Note To Specification Writer: Please copy steel pole construction specifications as outlined above except substitute words "commercial bronze" wherever word "steel" appears. Also omit all reference to field joint and splicing sleeve arrangement inasmuch as bronze poles are shipped in one piece only regardless of length. The same flagpole fittings specifications should be copied as indicated for steel poles above except that all reference to ground protector and galvanized cast iron parts should be omitted. Omit all reference to painting and state that the bronze flagpole and bronze parts shall have a standard brush finish, clear lacquered. The foundation tube should be specified as steel, not bronze.

91½-ft. Genuine Venetian Entasis Tapered Bronze Flagpole
The Seagram Building
New York, N.Y.
Architects: Mies van der Rohe and Philip Johnson
Associate Architects: Kahn and Jacobs

table 2

Pole Height Above Ground in Feet	Entasis Tapered Portion in Feet	Vertical Spacing of Entasis Stations	ENTASIS STATIONS IN TAPERED PORTION OF POLE WITH RESPECTIVE DIAMETERS IN INCHES													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
STANDARD PATTERN POLES																
20	13	4′ 4″	4	3¾	3	2										
25	17	4′ 3″	4½	4⅜	4	3⅜	2½									
30	20	5′ 0″	5	4⅞	4½	3⅞	3									
35	23	4′ 7″	5 9/16	5 7/16	5⅛	4⅝	3 15/16	3								
40	25	5′ 0″	6⅝	6½	6 1/16	5½	4⅝	3½								
45	30	5′ 0″	7⅝	7½	7⅛	6 9/16	5¾	4 11/16	3½							
50	35	5′ 0″	8⅝	8½	8⅛	7⅝	6 13/16	5⅞	4¾	3½						
60	40	5′ 0″	9⅝	9½	9¼	8 11/16	8	7⅛	6	4⅞	3½					
65	45	5′ 0″	10¾	10 11/16	10⅜	9 15/16	9⅝	8½	7 9/16	6½	5 5/16	4				
70	45	5′ 0″	11¾	11 11/16	11⅜	10 13/16	10⅛	9 3/16	8⅛	6⅞	5½	4				
75	50	5′ 0″	12¾	12 11/16	12⅜	11 5/16	11¼	10⅜	9⅜	8¼	7	5 1/16	4			
80	55	5′ 0″	14	13 5/16	13 3/16	13⅛	12 5/16	11¾	10⅜	9⅝	8⅜	7 1/16	5⅝	4		
90	60	5′ 0″	14	13⅞	13¾	13⅜	12⅞	12¼	11⅜	10½	9½	8⅜	7⅛	5¾	4	
100	65	5′ 0″	16	15 5/16	15⅞	15⅜	14¾	14 1/16	13⅛	12 3/16	11⅛	9⅞	8½	7 1/16	5 9/16	4
EXTRA HEAVY PATTERN POLES																
20	13	4′ 4″	5	4¾	4⅛	3										
25	17	4′ 3″	6	5¾	5 5/16	4¼	3									
30	20	5′ 0″	6⅝	6 7/16	5 13/16	4 13/16	3½									
35	23	4′ 7″	7⅝	7½	6 15/16	6¼	4⅞	3½								
40	25	5′ 0″	8⅝	8 7/16	7⅞	6⅞	5 9/16	4								
45	30	5′ 0″	9⅝	9 7/16	8 15/16	8⅛	7	5⅝	4							
50	35	5′ 0″	10¾	10 11/16	10¼	9 5/16	8⅝	7 7/16	6 1/16	4½						
60	40	5′ 0″	11¾	11⅝	11¼	10 1/16	9 13/16	8¾	7½	6 1/16	4½					
65	45	5′ 0″	12¾	12 11/16	12⅜	11⅞	11 1/16	10 3/16	9⅛	7⅞	6⅝	5				
70	45	5′ 0″	14	13⅞	13⅝	13	12 3/16	11 3/16	10	8⅝	7⅛	5				
75	50	5′ 0″	14	13⅞	13⅝	13⅛	12 5/16	11⅜	10½	9⅜	7⅛	6½	5			
80	55	5′ 0″	16	15⅞	15⅝	15⅛	14½	13⅜	12⅝	11½	10⅛	8 1/16	7 3/16	5		
90	60	5′ 0″	18	17 15/16	17⅞	17¼	16⅝	15 11/16	14⅝	13½	12⅛	10⅝	9⅛	7⅜	5	
100	65	5′ 0″	20	19 15/16	19¾	19¼	18⅝	17 11/16	16⅝	15 7/16	14 1/16	12⅝	11	9¼	7 7/16	5

CONE TAPERED ALUMINUM *flagpoles*

description

Cone Tapered Aluminum Flagpoles for ground setting are available in standard lengths from 23 feet to 88 feet. The poles are made of seamless extruded aluminum having a wall thickness from 3/16-in. to 3/8-in. depending on diameter and are cold rolled, insuring smooth concentric shape, with a uniform conical taper of 1" in every 5'6" in the tapered portion. The material is 6063-T6 aluminum, having a tensile strength of 35,000 lbs. per sq. in. and a yield point of 30,000 lbs. per sq. in. This material is heat treated, age hardened, architectural aluminum, noted for its good weathering qualities and strength characteristics.

In designing these aluminum flagpoles careful consideration has been given to the characteristics of aluminum compared to steel and the limitations of aluminum for flagpole use. THE DIAMETERS TAPERED LENGTHS, AND WALL THICKNESS SHOWN ARE THE MINIMUM CONSISTENT WITH GOOD ENGINEERING PRACTICE FOR THIS PARTICULAR METAL. ALUMINUM POLES HAVING SMALLER DIAMETERS OR LIGHTER WALL THICKNESS FOR THESE SAME GIVEN LENGTHS SHOULD NOT BE CONSIDERED. In winds of hurricane velocity the deflection in the smaller diameter poles could develop to such proportions that a permanent bend would result or the wind stress imposed could exceed the yield strength of the material to such an extent that pole failure would be possible.

The exterior surface of our Cone Tapered Aluminum Flagpoles is machined to a centerless 80-grit satin finish, then waxed to minimize any handling discoloration and to insure uniform weathering characteristics. After waxing, the poles are spirally wrapped with heavy paper, covered with burlap, wood stripped, and steel banded for protection during transit. After the protective wrappings have been removed and the pole erected, the exposed aluminum surface will gradually weather to a uniform grey patina. Alcoa does not recommend alumiliting or anodizing as being advantageous for flagpoles. THE EXPOSED SURFACE OF ALUMINUM FLAGPOLES SHOULD NOT BE PAINTED IN EITHER SHOP OR FIELD THUS ALLOWING THE ALUMINUM TO WEATHER NATURALLY AND MAKING PAINTING MAINTENANCE UNNECESSARY. However, the unexposed portion of the pole below ground should be heavily shop coated inside and outside with black asphaltum. Shop painting of the exposed aluminum is usually advantageous only to the fabricator in that it saves the extra expense of working the material to a fine satin finish and serves as a means of hiding welds or surface imperfections.

description (continued)

All poles may be shipped in one piece without field joints except that a substantial saving can be made in freight costs if standard poles 38½ feet and longer are each shipped in two pieces. In that case the pole is arranged with a snug-fitting, precision-made, self-aligning, self-locking, internal splicing sleeve arrangement requiring no field welding nor grinding after the two sections are pushed together at the erection site. Field welding is absolutely not recommended.

Bronze fittings or aluminum fittings having bronze parts should not be used on aluminum poles because of serious galvanic corrosive action between the two metals.

specifications

Flagpole—Furnish and erect, where shown on plans, a cone tapered aluminum flagpole, complete with all standard fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, N.J. and install concrete foundation in accordance with their standard details. Flagpole to be ground set, Standard Type, ... feet exposed height above ground by . . . . feet total length. The outside butt diameter shall be . . . . inches, the tapered portion . . feet . . . . inches and the outside top diameter . . . . inches.

Flagpole Construction—The flagpole shall have a wall thickness throughout of not less than .188-in. (except if pole is 65-ft. or over, for wall thickness see footnotes under table of dimensions on page 15) and shall have a uniform conical taper of 1" in every 5'6" throughout the tapered portion. The pole shall be machine-made of 6063-T6 seamless extruded aluminum and not from rolled plate with welded seam. Pole shall have a smooth uninterrupted exterior surface without visible joints or offsets and shall be shipped in one piece without field joints unless a substantial saving in freight cost is possible by a two piece shipment. The exterior surface of the pole shall be machined to a centerless 80-grit satin finish and then waxed. Painting of the exposed aluminum will not be permitted. Before shipment, the pole shall be spirally wrapped with heavy paper, covered with burlap, wood-stripped, and steel-banded for protection during transit. If pole is shipped in two pieces, the field joint shall consist of a snug-fitting, precision-made, internal splicing sleeve arrangement so designed that self-alignment and locking of pole sections in field are assured without use of field welding, shims, wedges, aligning bolts and internal tie rods, etc.

Painting—The unexposed portion of flagpole below ground shall receive a heavy coat of black asphaltum inside and outside before shipment.

specifications (continued)

Ball—The ball shall be . . . . inches in diameter (see table of dimensions) constructed of 14-ga. aluminum, having flush seam and a centerless 80-grit satin finish, waxed. Ball shall be mounted on a 3/8-in. dural rod attached to truck.

Truck—Provide a Lingo standard ball bearing non-fouling truck with aluminum body, revolving on aluminum spindle with ball race containing twenty-six 1/4-in. stainless steel balls. Truck shall be fitted with two 2 3/8-in. diameter nylon-bushed aluminum sheaves rotating on 3/8-in. dural pins. **Note:** For poles 65-ft. and longer truck is extra heavy type having 4-in. sheaves and 1/2-in. pins.

Halyards—Provide two 5/16-in. dia. #10 cotton braided rope halyards each with two aluminum snaps for securing to flag.

Cleats—Provide two 9-in. cast aluminum cleats each attached to pole with two 5/16-in. flat head dural machine screws.

Foundation Tube—Provide a galvanized foundation tube (16-ga. corrugated steel) (standard seamless steel pipe) of proper length and diameter for this size pole in accordance with Type (I) (II) (IIA) (III) of this manufacturer. Include welded steel bottom plate, lower welded steel internal centering wedges, steel lightning ground spike and steel plate support, all galvanized and as detailed.

Metal Base (Optional)—Provide a standard cast aluminum base, design number . . . . . having a centerless 80-grit satin finish, waxed. Provide recess in top for waterproof calking to flagpole after erection.

specification (continued)

Notes: For standard aluminum bases please see pages 22 and 23. For recommended foundation dimensions and types of foundation tube arrangements please refer to page 24. Ground protectors are not supplied nor advantageous on aluminum flagpoles; aluminum bases #2001, #2002 or #2003 (see page 22) may be used in lieu thereof if so desired. Cleat covers in aluminum with standard padlocks and hardware can also be furnished.

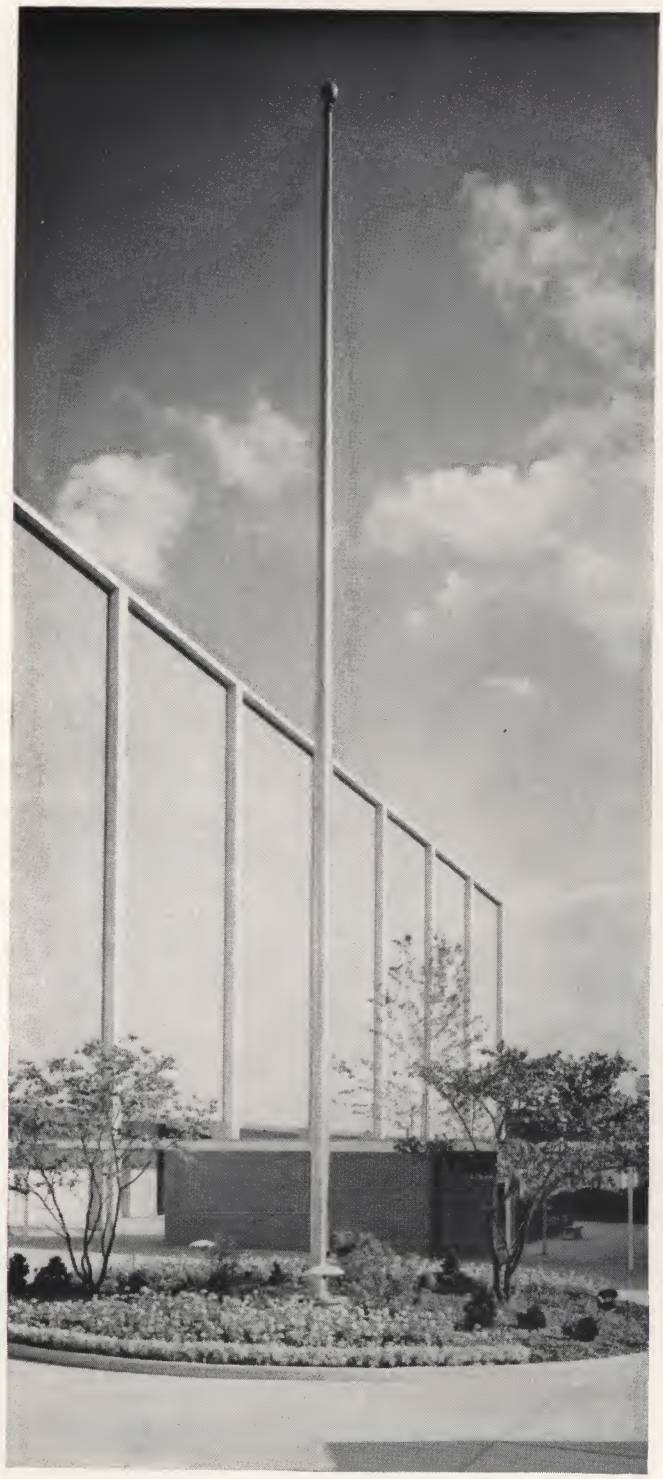
dimensions

Exposed hgt., feet	Setting depth, ft.	Total length, feet	Diameter, in.			Bare Pole weight, lbs.	Wall thickness, in.	Tapered portion	Cylindrical butt portion
			Butt	Top	Ball				
STANDARD TYPE									
20	3	23	5	3¼	5	80	.188	9′ 8″	13′ 4″
25	3	28	5½	3½	6	110	.188	11′ 0″	17′ 0″
30	3	33	6	3½	6	140	.188	13′ 9″	19′ 3″
35	3½	38½	7	3½	6	200	.188	19′ 3″	19′ 3″
40	4	44	8	3½	8	250	.188	24′ 9″	19′ 3″
50	5	55	10	4	10	385	.188	33′ 0″	22′ 0″
59	6	65	12	5	12	665	*	38′ 6″	26′ 6″
70	7	77	12	5	12	840	*	38′ 6″	38′ 6″
75	7½	82½	12	5	14	990	**	38′ 6″	44′ 0″
80	8	88	12	5	14	1075	**	38′ 6″	49′ 6″

* 65-ft. and 77-ft. poles have wall thickness of .188-in. in upper 16′6″ and .250-in. in remainder.

** 82½-ft. and 88-ft. poles have wall thickness of .188-in. in upper 16′6″, .250-in. in middle 48′6″ and .375-in. in remainder.

Three 65-ft. Cone Tapered Aluminum Flagpoles
The Statler-Hilton Hotel
Dallas, Texas
Architect: William B. Tabler



65-ft. Cone Tapered Aluminum Flagpole
Hudson's Eastland Center
Harper Woods, Michigan
Architect: Victor Gruen Associated
Architects & Engineers, Inc.

CONE TAPERED EQUIPOISE TILTING *flagpoles*

description

Equipoise Counter-balanced Tilting Flagpoles are available in standard lengths of 20, 25, 30, 35, 40, and 50 feet. They can be speedily lowered and raised by one man whenever replacement of halyard rope, etc. is necessary. These tilting poles are furnished in Cone Tapered Standard Type Aluminum construction only, made of 6063-T6 seamless extruded aluminum having a 3/16-in. minimum wall thickness and are cold rolled, insuring smooth concentric shape, with a uniform conical taper of 1" in every 5'6" in the tapered portion. Pole diameters shown in table of dimensions are minimum consistent with good engineering practice for respective pole lengths. The exterior surface of the pole is machined to a centerless 80-grit satin finish, then waxed to minimize any handling discoloration and to insure uniform weathering characteristics. Before shipment the poles are spirally wrapped with heavy paper, covered with burlap, wood stripped and steel banded for protection during transit. NO PAINTING OF THE ALUMINUM POLE AND ALUMINUM PARTS IS REQUIRED NOR RECOMMENDED. (See page 14.)

The Equipoise counter-balanced tilting unit is all-steel construction consisting of channels, base plate, counter-weights, container, pipe ferrule, bolts and innerliner. All parts of the tilting unit are painted one shop coat of aluminum paint except that the pole butt innerliner and pipe ferrule are hot-dip galvanized.

The pole can be lowered whenever desired with the utmost ease and complete safety by merely removing two small bolts near the bottom of unit and applying slight pressure to the counterweight container. The pole is in perfect balance at any position and the base load remains unchanged during the operation. Only minimum anchorage of the surface-mounted base plate is required, and there is no advantage to extend the channels into the foundation. The counterweights are neatly housed in a trim-appearing steel container, thereby eliminating any necessity for an ornamental base cover. The galvanized steel pole butt innerliner is an integral part of the counter-balance arrangement and provides added reinforcement to the pole during the raising and lowering operation.

description (continued)

All poles can be shipped in one piece without field joints but a substantial saving can usually be made in freight costs if poles 35-ft. and over are shipped in two pieces. In that case the pole is arranged with a snug-fitting, precision-made, self-aligning, self-locking, internal splicing sleeve arrangement requiring no field welding nor grinding after the two sections are pushed together at the erection site. Field welding is absolutely not recommended.

specifications

Flagpole—Furnish and erect a . . . . feet high Equipoise Counter-balanced Tilting Flagpole, manufactured by "A" Division of John E. Lingo & Son, Inc., Camden, N. J. Pole shall be of Cone Tapered Standard Type Aluminum construction, ... inches outside diameter at butt tapering conically through the upper . . . . feet . . . . inches to . . . . inches outside diameter at top.

Flagpole Construction—The flagpole shall have a wall thickness throughout of not less than .188-in. and shall have a uniform conical taper of 1" in every 5'6" throughout the tapered portion. The pole shall be machine-made of 6063-T6 seamless extruded aluminum and not from rolled plate with welded seam. Pole shall have a smooth uninterrupted exterior surface without offsets and shall be shipped in one piece without field joints unless a substantial saving in freight cost is possible by a two piece shipment. The exterior surface of the pole shall be machined to a centerless 80-grit satin finish and then waxed. Painting of the exposed aluminum will not be permitted. Before shipment, the pole shall be spirally wrapped with heavy paper, covered with burlap, wood-stripped, and steel-banded for protection during transit. *Additional specifications for poles 35-ft. and over.* If pole is shipped in two pieces, the field joint shall consist of a snug-fitting, precision-made, internal splicing sleeve arrangement so designed that self-alignment and locking of pole sections in field are assured without use of field welding, shims, wedges, internal tie rods, etc.

Ball—The ball shall be . . . . inches in diameter (see accompanying table of dimensions), constructed of 14-ga. aluminum, having flush seam and a centerless 80-grit satin finish, waxed. Ball shall be mounted on a 5/8-in. dural rod attached to truck.

dimensions

Pole length—feet	20	25	30	35	40	50
Outside Butt Diameter—Inches	5	5½	6	7	8	10
Outside Top Diameter—Inches	3¼	3½	3½	3½	3½	4
Wall Thickness—Inches	.188	.188	.188	.188	.188	.188
Tapered Portion	9' 8"	11' 0"	13' 9"	19' 3"	24' 9"	33' 0"
Cylindrical Butt Portion	10' 4"	14' 0"	16' 3"	15' 9"	15' 3"	17' 0"
Ball Diameter—Inches	5	6	6	6	8	10
Channel Size—Inches	5	6	6	7	8	10
Channel Weight Per Ft.—Lbs.	6.7	8.2	8.2	9.8	11.5	20
Base Plate (Square)	16 x ½	18 x ½	20 x ½	22 x ½	24 x ½	28 x ½
Diameter of 4 Base Plate Holes	⅞"	⅞"	⅞"	1 5/16"	1 5/16"	1 5/16"
Edge Distance—Inches	2	2	2	2	2	2
Diameter and Length of 4 Anchor Bolts—Inches	¾ x 15	¾ x 16	¾ x 16	⅞ x 17	⅞ x 18	⅞ x 20
Setting Depth of Bolts—Inches	13	14	14	15	15	18
Innerliner Extension Above Fulcrum Point—Inches	12	15	18	21	24	30
Bare Pole Weight—Lbs.	70	100	125	185	225	350
Complete Tilting Arrangement—Lbs.	350	500	625	850	1050	2100
Foundation Height Above Ground	6"	6"	6"	6"	6"	6"
Foundation Depth Below Ground	2' 6"	2' 9"	3' 0"	3' 3"	3' 6"	4' 0"
Foundation Size (Square) for Firm Dry Soil	2' 4"	2' 6"	2' 8"	2' 10"	3' 0"	3' 6"

specifications (continued)

Truck—Provide a Lingo standard non-fouling ball bearing revolving truck with aluminum body, revolving on aluminum spindle with ball race containing twenty-six ¼-in. stainless steel balls. Trucks shall be fitted with two 2⅜-in. diameter nylon-bushed aluminum sheaves rotating on ⅜-in. dural pins.

Halyard—Provide one ⅜-in. dia. U.S. standard manila bolt rope halyard with two aluminum swivel snaps for securing to flag.

Cleat—Provide one 9-in. cast aluminum cleat attached to side of channel with two 5/16-in. dural machine screws.

Tilting Arrangement—Provide one complete standard Equipoise Counter-balanced steel tilting arrangement consisting of surface-mounted channels and base plate, counterweights, container, pipe ferrule, pivot bolt, anchor bolts, locking clips and standard steel pipe innerliner to extend . . . . inches above fulcrum point (see accompanying table of dimensions). All steel parts shall be painted one shop coat of aluminum paint except that the steel pipe innerliner and the pipe ferrule shall be hot-dip galvanized.

Finish— Flagpole and all aluminum parts shall have a centerless 80-grit satin finish, waxed. Painting of the aluminum will not be allowed. All exposed steel parts of tilting arrangement shall be painted one shop coat of aluminum paint except that the steel pipe innerliner and the pipe ferrule shall be hot-dip galvanized. Apply one field coat of aluminum paint to all exposed steel surfaces after erection.

typical installation

35-ft. Standard Type Cone Tapered
Aluminum Flagpole with
Equipoise Tilting Unit
Spindletop Elementary School
Beaumont, Texas
Architect: Wallace B. Livesay

40-ft. Standard Type Cone Tapered
Aluminum Flagpole with
Equipoise Tilting Unit
Ernest W. Potter School
Flint, Michigan
Architects: Eberle M. Smith Associates, Inc.
Detroit

NAUTICAL TYPE *flagpoles*

description

These special steel flagpole arrangements are particularly appropriate for installation at yacht clubs, marinas, swimming pools, piers, wharves, Coast Guard stations, Naval and Marine bases, seashore or lakeside residences and other buildings where a nautical motif is desired.

The double-mast pole consists of topmast, lowermast, horizontal yardarm (crossarm) and gaff, the latter being projected at 30 degrees above the horizontal. The individual members are very carefully proportioned as to their respective lengths, etc., so that the finished assembly gives the most pleasing nautical effect. The topmast is approximately 40% of the combined assembled height of the entire pole above ground, including approximately 10% overlapping distance on lowermast. The lowermast is approximately 60% of the combined assembled height of the entire pole above ground plus 10% of topmast length for overlap and 10% of the exposed assembled pole height for setting depth in foundation or anchorage. The yardarm length is approximately 27% of the combined assembled height of the entire pole above ground. The gaff length is approximately 18% of the combined assembled height of the entire pole above ground. The poles will also accommodate such optional items as eagle weathervanes, anemometers, obstruction lights, signal and running lights, etc. These double-mast poles are manufactured of both Swaged Sectional and Cone Tapered steel construction in two different weights and are available in standard exposed heights from 40 to 100 feet, as shown in the complete tables of dimensions on pages 20 to 21. Taller poles can be produced to special order. The Swaged Sectional poles are less costly than the Cone Tapered poles. Poles and steel parts are galvanized after fabrication by the hot-dip process where installations are made at the seacoast or at other locations where water or dampness is a factor. For dry locations away from salt air, water and constant dampness, the poles are completely satisfactory and a saving can be realized if the galvanizing is omitted and the poles are painted a shop coat of red lead and oil followed by two field coats of white lead and oil. Field painting of galvanized poles should be deferred until about six months after the pole is initially installed. This period allows the galvanized surface to properly weather or neutralize so that paint will then adhere without risk of peeling or blistering. Recommended minimum foundation dimensions for conventional installations in good, firm, dry soil only can be obtained from data given on pages 24 & 25. However, where sand, muck and water conditions prevail or where anchorage is to pier or wharf structures then special foundations or anchorages will be necessary. In such cases please consult us before finally specifying foundation dimensions or anchorage details.

Nautical type poles can also be furnished in Cone Tapered aluminum construction within certain height limitations and diameter restrictions. Please consult us before specifying.

specifications

(For Standard Dimensions See Pages 20 and 21)

Furnish and erect, where shown on plans, a .... feet high (Swaged Sectional) (Cone Tapered) steel double-mast nautical type flagpole, complete with yardarm, gaff and all other equipment made in strict accordance with the standard product of "A" Division of John E. Lingo & Son, Inc., Camden, New Jersey. Pole shall be Type Number ..... having an assembled exposed height above ground of .... feet by a total assembled length of .... feet including portion in foundation or anchorage. The topmast shall have an exposed height of .... feet .... inches above lowermast. The lowermast shall have an exposed height of .... feet .... inches above ground and be set .... feet .... inches in foundation or anchorage. The yardarm shall be .... feet .... inches long. The gaff shall be .... feet .... inches long.

Pole shall be equipped with standard gold leafed copper arrow weathervane, having .... inches arrow length, standard non-fouling ball bearing revolving truck, one 9" cast iron galvanized cleat, one 3/8-in. dia. U. S. standard manila bolt rope halyard with two bronze swivel snaps, one standard steel ground protector and two standard fabricated steel bands, etc. for connecting topmast to lowermast.

Yardarm shall be furnished with two standard bronze swivel blocks, two 3/8-in. dia. U. S. standard manila bolt rope halyards each with two bronze swivel snaps, two 9" cast iron galvanized cleats and one standard fabricated steel connection for attaching yardarm to lowermast.

Gaff shall be furnished with one standard bronze pole cap, one standard bronze swivel block, one 9" cast iron galvanized cleat, one 3/8-in. U. S. standard manila bolt rope halyard with two bronze swivel snaps and one standard fabricated steel socket arrangement for attaching gaff to lowermast at 30 degrees above horizontal.

Topmast, lowermast, yardarm, gaff and all steel connecting fittings shall be galvanized after fabrication by the hot-dip process.

notes to specification writer

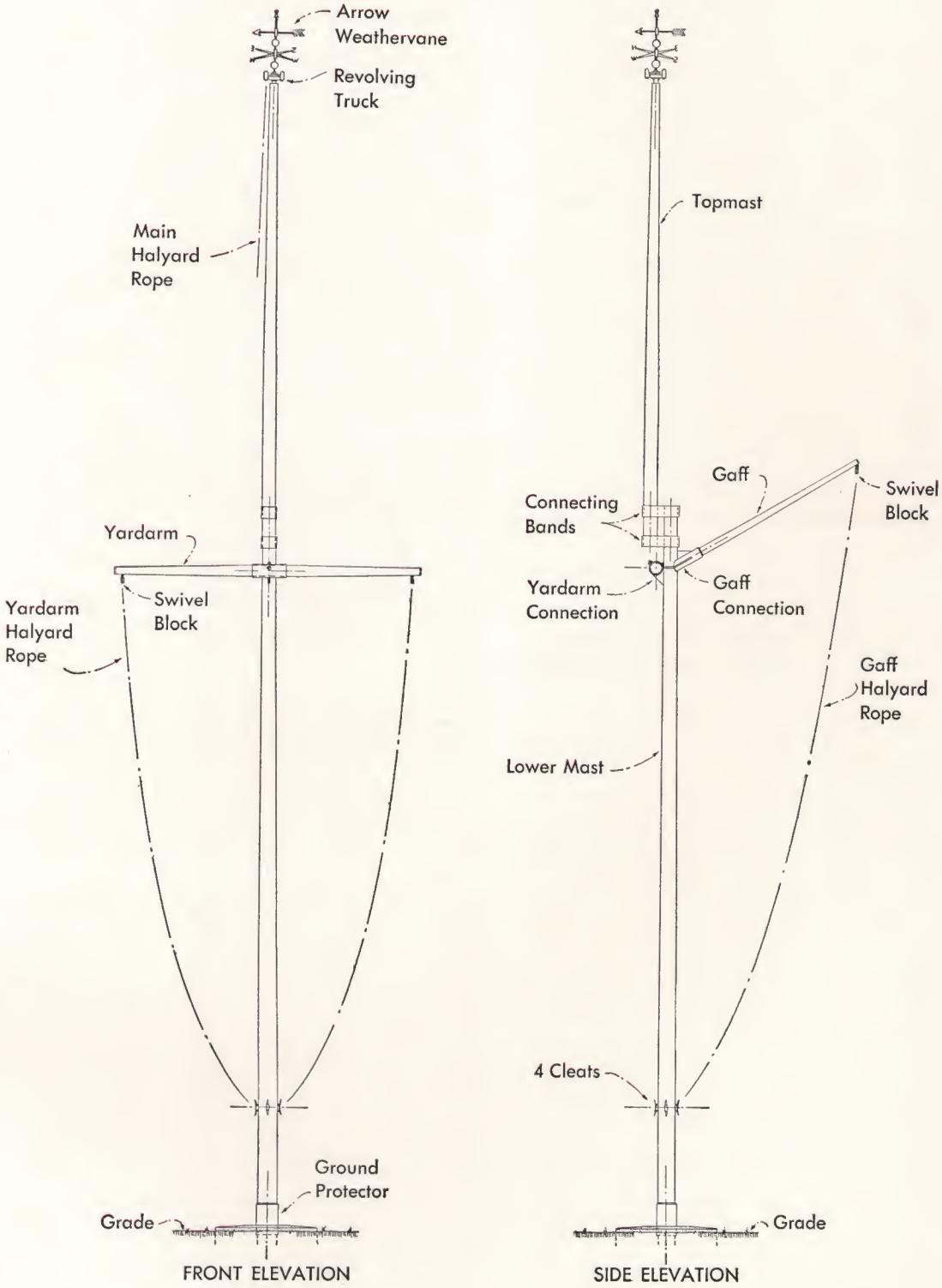
1. If pole will be located away from salt air, water and constant dampness, the galvanizing can be omitted in which case specify that the topmast, lowermast, yardarm, gaff and all steel connecting fittings be painted one shop coat of red lead and oil followed by two coats of white lead and oil after erection.

2. If good, firm dry soil exists at the erection site and the pole will anchor in the conventional manner please add the following specifications: Install concrete foundation in accordance with standard details of "A" Division of John E. Lingo & Son, Inc., Camden, New Jersey. Provide a steel foundation tube made of (16-ga. galvanized corrugated steel) (standard seamless steel pipe) of length and diameter for this size pole, in accordance with Type (I) (II) (IIA) (III) of this manufacturer. Include welded steel bottom plate, lower steel welded internal centering wedges, steel lightning ground spike and steel plate support, as detailed. The inside diameter of the foundation tube shall be about 3-in. larger than the outside butt diameter of the pole.

3. Where extremes of sand, muck and water prevail at erection site or where anchorage is to pier or wharf structures, please consult us before specifying foundation dimensions or anchorage details.

4. If metal base or flash collar is desired (see pages 22 and 23) indicate exact design number and metal of base required and *omit* ground protector from specifications.

double-mast nautical type steel flagpole



DIMENSIONS
DOUBLE-MAST SWAGED SECTIONAL STEEL FLAGPOLES

HEAVY PATTERN

POLE TYPE NUMBER	DM-40-HP	DM-45-HP	DM-50-HP	DM-55-HP	DM-60-HP	DM-65-HP	DM-70-HP	DM-75-HP	DM-80-HP	DM-90-HP	DM-100-HP
ASSEMBLED EXPOSED HEIGHT OF TOPMAST & LOWERMAST ABOVE GROUND	40′	45′	50′	55′	60′	65′	70′	75′	80′	90′	100′
TOTAL ASSEMBLED LENGTH (including portion in ground)	44′	49½′	55′	60½′	66′	71½′	77′	82½′	88′	99′	110′
TOPMAST DIMENSIONS											
Exposed Height (above lowermast)	14′0″	16′0″	18′0″	19′9″	21′6″	23′6″	25′0″	27′0″	28′6″	32′6″	36′0″
Overlap (through connecting bands)	2′0″	2′0″	2′0″	2′3″	2′6″	3′0″	3′0″	3′0″	3′6″	3′6″	4′0″
Outside Diameter ,Top	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″
Outside Diameter, Butt	4″	4″	4½″	4½″	4½″	4½″	4½″	5″	5″	5⅝″	5⅝″
Number of Pipe Sections	3	3	4	4	4	4	4	5	5	6	6
ARROW WEATHERVANE	24″	24″	24″	30″	30″	30″	36″	36″	42″	42″	48″
LOWERMAST DIMENSIONS											
Height Above Ground	26′0″	29′0″	32′0″	35′3″	38′6″	41′6″	45′0″	48′0″	51′6″	57′6″	64′0″
Set in Foundation	4′0″	4′6″	5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	9′0″	10′0″
Outside Diameter, Top	4½″	4½″	5″	5″	5″	5″	5″	5⅝″	5⅝″	6⅝″	6⅝″
Outside Diameter, Butt	5⅝″	5⅝″	6⅝″	6⅝″	7⅝″	7⅝″	8⅝″	9⅝″	10¾″	11¾″	12¾″
Number of Pipe Sections	3	3	3	3	4	4	5	5	6	6	7
YARDARM DIMENSIONS											
Length	11′0″	12′0″	13′6″	15′0″	16′6″	17′6″	19′0″	20′6″	22′0″	24′6″	27′0″
Outside Diameter, Center	3½″	3½″	4″	4″	4″	4″	4″	4½″	4½″	5″	5″
Outside Diameter, Ends	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	3½″	3½″
Number of Pipe Sections	3	3	5	5	5	5	5	7	7	7	7
GAFF DIMENSIONS											
Length	7′6″	8′0″	9′0″	10′0″	11′0″	12′0″	13′0″	14′0″	15′0″	16′6″	18′0″
Outside Diameter, Top	2⅜″	2⅜″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	3½″	3½″
Outside Diameter, Butt	2⅞″	2⅞″	3½″	3½″	3½″	3½″	3½″	4″	4″	4½″	4½″
Number of Pipe Sections	2	2	2	2	2	2	2	3	3	3	3
SHIPPING WEIGHT: Topmast, lowermast, yardarm, gaff, all connecting bands, ground protector and other standard fittings (excluding optional fittings)											
Lbs.	929	1041	1344	1458	1730	1890	2172	2718	3223	4340	5077
OPTIONAL FITTINGS											
Foundation Tube	—Please See Information on Page 24.										
Eagle With Arrow Weathervane	24″	24″	24″	30″	30″	30″	36″	36″	42″	42″	48″
Ornamental Base or Flash Collar	—See Details of Stock Bases on Pages 22 & 23.										
Lighting Equipment	—Consult Manufacturers of Marine Lighting Equipment.										

EXTRA HEAVY PATTERN

POLE TYPE NUMBER	DM-40-EHP	DM-45-EHP	DM-50-EHP	DM-55-EHP	DM-60-EHP	DM-65-EHP	DM-70-EHP	DM-75-EHP	DM-80-EHP	DM-90-EHP	DM-100-EHP
ASSEMBLED EXPOSED HEIGHT OF TOPMAST & LOWERMAST ABOVE GROUND	40′	45′	50′	55′	60′	65′	70′	75′	80′	90′	100′
TOTAL ASSEMBLED LENGTH (including portion in ground)	44′	49½′	55′	60½′	66′	71½′	77′	82½′	88′	99′	110′
TOPMAST DIMENSIONS											
Exposed Height (above lowermast)	14′0″	16′0″	18′0″	19′9″	21′6″	23′6″	25′0″	27′0″	28′6″	32′6″	36′0″
Overlap (through connecting bands)	2′0″	2′0″	2′0″	2′3″	2′6″	3′0″	3′0″	3′0″	3′6″	3′6″	4′0″
Outside Diameter, Top	3½″	3½″	3½″	3½″	3½″	3½″	4″	4″	4″	4″	4″
Outside Diameter, Butt	4½″	4½″	5″	5″	5″	5″	5⅝″	6⅜″	6⅜″	7⅝″	7⅝″
Number of Pipe Sections	3	3	4	4	4	4	4	5	5	6	6
ARROW WEATHERVANE	24″	24″	24″	30″	30″	30″	36″	36″	42″	42″	48″
LOWERMAST DIMENSIONS											
Height Above Ground	26′0″	29′0″	32′0″	35′3″	38′6″	41′6″	45′0″	48′0″	51′6″	57′6″	64′0″
Set in Foundation	4′0″	4′6″	5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	9′0″	10′0″
Outside Diameter, Top	5″	5″	5⅝″	5⅝″	5⅝″	5⅝″	6⅝″	7⅝″	7⅝″	8⅝″	8⅝″
Outside Diameter, Butt	7⅝″	7⅝″	8⅝″	9⅝″	10¾″	10¾″	11¾″	12¾″	12¾″	14″	16″
Number of Pipe Sections	4	4	4	5	6	6	6	6	6	6	7
YARDARM DIMENSIONS											
Length	11′0″	12′0″	13′6″	15′0″	16′6″	17′6″	19′0″	20′6″	22′0″	24′6″	27′0″
Outside Diameter, Center	4″	4″	4½″	4½″	4½″	4½″	5″	5⅝″	5⅝″	6″	6″
Outside Diameter, Ends	3½″	3½″	3½″	3½″	3½″	3½″	3½″	4″	4″	4½″	4½″
Number of Pipe Sections	3	3	5	5	5	5	7	7	7	7	7
GAFF DIMENSIONS											
Length	7′6″	8′0″	9′0″	10′0″	11′0″	12′0″	13′0″	14′0″	15′0″	16′6″	18′0″
Outside Diameter, Top	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	2⅞″	3½″	3½″	3½″	4″	4″
Outside Diameter, Butt	3½″	3½″	4″	4″	4″	4″	4½″	5″	5″	5⅝″	5⅝″
Number of Pipe Sections	2	2	3	3	3	3	3	4	4	4	4
SHIPPING WEIGHT: Topmast, lowermast, yardarm, gaff, all connecting bands, ground protector and other standard fittings (excluding optional fittings)											
Lbs.	1226	1374	1747	2112	2566	2678	3522	4321	4508	6213	7435
OPTIONAL FITTINGS (see table above)											

DIMENSIONS
DOUBLE-MAST CONE TAPERED STEEL FLAGPOLES

STANDARD TYPE

POLE TYPE NUMBER	DM-40-ST	DM-45-ST	DM-50-ST	DM-55-ST	DM-60-ST	DM-65-ST	DM-70-ST	DM-75-ST	DM-80-ST	DM-90-ST	DM-100-ST
ASSEMBLED EXPOSED HEIGHT OF TOPMAST & LOWERMAST ABOVE GROUND	40′	45′	50′	55′	60′	65′	70′	75′	80′	90′	100′
TOTAL ASSEMBLED LENGTH (including portion in ground)	44′	49½′	55′	60½′	66′	71½′	77′	82½′	88′	99′	110′
TOPMAST DIMENSIONS											
Exposed Height (above lowermast)	14′0″	16′0″	18′0″	19′9″	21′6″	23′6″	25′0″	27′0″	28′6″	32′6″	36′0″
Overlap (through connecting bands)	2′0″	2′0″	2′0″	2′3″	2′6″	3′0″	3′0″	3′0″	3′6″	3′6″	4′0″
Outside Diameter, Top	3¼″	3¼″	3¼″	3¼″	3¼″	3¼″	3¼″	3¼″	3¼″	3½″	3½″
Outside Diameter, Butt	4½″	5″	5⁹⁄₁₆″	5⁹⁄₁₆″	6″	6″	6″	6⅝″	6⅝″	7⅝″	7⅝″
Tapered Portion	9′0″	12′6″	16′6″	16′6″	19′6″	19′6″	19′6″	24′0″	24′0″	29′6″	29′6″
Wall Thickness	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″
Cylindrical Butt	7′0″	5′6″	3′6″	5′6″	4′6″	7′0″	8′6″	6′0″	8′0″	6′6″	10′6″
Wall Thickness	.237″	.247″	.258″	.258″	.250″	.250″	.250″	.280″	.280″	.301″	.301″
ARROW WEATHERVANE	24″	24″	24″	30″	30″	30″	36″	36″	42″	42″	48″
LOWERMAST DIMENSIONS											
Height Above Ground	26′0″	29′0″	32′0″	35′3″	38′6″	41′6″	45′0″	48′0″	51′6″	57′6″	64′0″
Set in Foundation	4′0″	4′6″	5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	9′0″	10′0″
Outside Diameter, Top	4½″	5″	5⁹⁄₁₆″	5⁹⁄₁₆″	6″	6″	6″	6⅝″	6⅝″	7⅝″	7⅝″
Outside Diameter, Butt	5⁹⁄₁₆″	6″	6⅝″	6⅝″	7⅝″	7⅝″	8⅝″	9⅝″	10¾″	11¾″	12¾″
Tapered Portion	7′6″	7′2″	7′6″	7′6″	11′6″	11′6″	18′9″	21′6″	29′6″	29′6″	36′6″
Wall Thickness	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″
Cylindrical Butt	20′6″	24′4″	27′6″	31′0″	30′6″	33′6″	30′3″	31′0″	26′6″	33′6″	33′6″
Wall Thickness	.258″	.250″	.280″	.280″	.301″	.301″	.322″	.342″	.365″	.375″	.375″
Cylindrical Portion (through connecting bands)	2′0″	2′0″	2′0″	2′3″	2′6″	3′0″	3′0″	3′0″	3′6″	3′6″	4′0″
Wall Thickness	.237″	.247″	.258″	.258″	.250″	.250″	.250″	.280″	.280″	.301″	.301″
YARDARM DIMENSIONS											
Length	11′0″	12′0″	13′6″	15′0″	16′6″	17′6″	19′0″	20′6″	22′0″	24′6″	27′0″
Outside Diameter, Center	3½″	4″	4½″	4½″	5″	5″	5″	5⁹⁄₁₆″	5⁹⁄₁₆″	6″	6″
Outside Diameter, Ends	2½″	2⅞″	2⅞″	2⅞″	3″	3″	3″	3″	3″	3¼″	3¼″
Cylindrical Portion, Center	2′0″	2′4″	2′8″	3′0″	3′4″	3′6″	3′10″	4′2″	4′6″	5′0″	5′6″
Tapered Portion, Ends	4′6″	4′10″	5′5″	6′0″	6′7″	7′0″	7′7″	8′2″	8′9″	9′9″	10′9″
Wall Thickness Throughout	.216″	.226″	.237″	.237″	.247″	.247″	.247″	.258″	.258″	.250″	.250″
GAFF DIMENSIONS											
Length	7′6″	8′0″	9′0″	10′0″	11′0″	12′0″	13′0″	14′0″	15′0″	16′6″	18′0″
Outside Diameter, Top	2⅜″	2⅜″	2½″	2⅞″	2⅞″	2⅞″	2⅞″	3″	3″	3¼″	3¼″
Outside Diameter, Butt	2⅞″	2⅞″	3½″	3½″	4″	4″	4″	4½″	4½″	5″	5″
Tapered Portion	5′8″	6′0″	6′9″	7′6″	8′3″	9′0″	9′9″	10′6″	11′4″	12′6″	12′6″
Wall Thickness	.203″	.203″	.216″	.216″	.226″	.226″	.226″	.237″	.237″	.250″	.250″
Cylindrical Butt	1′10″	2′0″	2′3″	2′6″	2′9″	3′0″	3′3″	3′6″	3′8″	4′0″	5′6″
Wall Thickness	.203″	.203″	.216″	.216″	.226″	.226″	.226″	.237″	.237″	.247″	.247″
SHIPPING WEIGHT: Topmast, lowermast, yardarm, gaff, all connecting bands, ground protector and other standard fittings (excluding optional fittings) Lbs.	1023	1210	1521	1652	2057	2206	2549	3140	3501	4454	5116
OPTIONAL FITTINGS											
Foundation Tube	—Please See Information on Page 24.										
Eagle With Arrow Weathervane	24″	24″	24″	30″	30″	30″	36″	36″	42″	42″	48″
Ornamental Base or Flash Collar	—See Details of Stock Bases on Pages 22 & 23.										
Lighting Equipment	—Consult Manufacturers of Marine Lighting Equipment.										

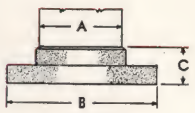
EXTRA HEAVY TYPE

POLE TYPE NUMBER	DM-40-EHT	DM-45-EHT	DM-50-EHT	DM-55-EHT	DM-60-EHT	DM-65-EHT	DM-70-EHT	DM-75-EHT	DM-80-EHT	DM-90-EHT	DM-100-EHT
ASSEMBLED EXPOSED HEIGHT OF TOPMAST & LOWERMAST ABOVE GROUND	40′	45′	50′	55′	60′	65′	70′	75′	80′	90′	100′
TOTAL ASSEMBLED LENGTH (including portion in ground)	44′	49½′	55′	60½′	66′	71½′	77′	82½′	88′	99′	110′
TOPMAST DIMENSIONS											
Exposed Height (above lowermast)	14′0″	16′0″	18′0″	19′9″	21′6″	23′6″	25′0″	27′0″	28′6″	32′6″	36′0″
Overlap (through connecting bands)	2′0″	2′0″	2′0″	2′3″	2′6″	3′0″	3′0″	3′0″	3′6″	3′6″	4′0″
Outside Diameter, Top	3¼″	3½″	3½″	4″	4″	4″	4″	4″	4″	4½″	4½″
Outside Diameter, Butt	5″	5⁹⁄₁₆″	6″	6⅝″	6⅝″	6⅝″	6⅝″	7⅝″	7⅝″	8⅝″	8⅝″
Tapered Portion	12′6″	14′8″	17′10″	18′9″	18′9″	18′9″	18′9″	25′10″	25′10″	29′6″	29′6″
Wall Thickness	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″
Cylindrical Butt	3′6″	3′3″	2′2″	3′3″	5′3″	7′9″	9′3″	4′2″	6′2″	6′6″	10′6″
Wall Thickness	.247″	.258″	.250″	.280″	.280″	.280″	.280″	.301″	.301″	.322″	.322″
ARROW WEATHERVANE	24″	24″	24″	30″	30″	30″	36″	36″	42″	42″	48″
LOWERMAST DIMENSIONS											
Height Above Ground	26′0″	29′0″	32′0″	35′3″	38′6″	41′6″	45′0″	48′0″	51′6″	57′6″	64′0″
Set in Foundation	4′0″	4′6″	5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	9′0″	10′0″
Outside Diameter, Top	5″	5⁹⁄₁₆″	6″	6⅝″	6⅝″	6⅝″	6⅝″	7⅝″	7⅝″	8⅝″	8⅝″
Outside Diameter, Butt	6″	6⅝″	7⅝″	8⅝″	9⅝″	10¾″	11¾″	12¾″	12¾″	14″	14″
Tapered Portion	7′2″	7′8″	11′7″	14′3″	21′6″	29′6″	36′6″	36′6″	36′6″	38′6″	38′6″
Wall Thickness	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″	.250″
Cylindrical Butt	20′10″	23′10″	23′5″	24′3″	20′6″	15′6″	12′0″	16′0″	19′6″	24′6″	31′6″
Wall Thickness	.250″	.280″	.301″	.322″	.342″	.365″	.375″	.375″	.375″	.500″	.500″
Cylindrical Portion (through connecting bands)	2′0″	2′0″	2′0″	2′3″	2′6″	3′0″	3′0″	3′0″	3′6″	3′6″	4′0″
Wall Thickness	.247″	.258″	.250″	.280″	.280″	.280″	.280″	.301″	.301″	.322″	.322″
YARDARM DIMENSIONS											
Length	11′0″	12′0″	13′6″	15′0″	16′6″	17′6″	19′0″	20′6″	22′0″	24′6″	27′0″
Outside Diameter, Center	4″	4½″	5″	5⁹⁄₁₆″	5⁹⁄₁₆″	5⁹⁄₁₆″	5⁹⁄₁₆″	6″	6″	6⅝″	6⅝″
Outside Diameter, Ends	2⅞″	2⅞″	3″	3″	3″	3″	3″	3¼″	3¼″	3½″	3½″
Cylindrical Portion, Center	2′0″	2′4″	2′8″	3′0″	3′4″	3′6″	3′10″	4′2″	4′6″	5′0″	5′6″
Tapered Portion, Ends	4′6″	4′10″	5′5″	6′0″	6′7″	7′0″	7′7″	8′2″	8′9″	9′9″	10′9″
Wall Thickness Throughout	.226″	.237″	.247″	.258″	.258″	.258″	.258″	.250″	.250″	.280″	.280″
GAFF DIMENSIONS											
Length	7′6″	8′0″	9′0″	10′0″	11′0″	12′0″	13′0″	14′0″	15′0″	16′6″	18′0″
Outside Diameter, Top	2⅞″	2⅞″	2⅞″	3″	3″	3″	3″	3¼″	3¼″	3½″	3½″
Outside Diameter, Butt	3½″	3½″	4″	4½″	4½″	4½″	4½″	5″	5″	5⁹⁄₁₆″	5⁹⁄₁₆″
Tapered Portion	5′8″	6′0″	6′9″	7′6″	8′3″	9′0″	9′9″	12′6″	12′6″	14′6″	14′6″
Wall Thickness	.216″	.216″	.226″	.237″	.237″	.237″	.237″	.250″	.250″	.250″	.250″
Cylindrical Butt	1′10″	2′0″	2′3″	2′6″	2′9″	3′0″	3′3″	1′6″	2′6″	2′0″	3′6″
Wall Thickness	.216″	.216″	.226″	.237″	.237″	.237″	.237″	.247″	.247″	.258″	.258″
SHIPPING WEIGHT: Topmost, lowermast, yardarm, gaff, all connecting bands, ground protector and other standard fittings (excluding optional fittings) Lbs.	1115	1391	1742	2249	2568	2816	3076	3601	4012	5477	6327
OPTIONAL FITTINGS (see table above)											

features

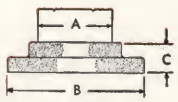
This line of standard metal bases can be supplied in cast iron (painted or galvanized), cast aluminum (having a centerless 80-grit satin finish, waxed), cast bronze (having standard brush finish, clear lacquered) or cast Monel-S metal (having appearance of stainless steel but with greater strength, chemical analysis: Ni 63, Cu 30, Fe 2, Si 4 and Mn 0.7) having #4 finish; except that Design #2000 is supplied in painted or galvanized fabricated steel or in fabricated stainless steel; Design #1930 is furnished in painted or galvanized fabricated steel and in fabricated aluminum, bronze or stainless steel. Designs #2000, #2001, #2002 and #2003 are conventional flash collar types. Please see following page for additional standard metal bases. Details of other designs, not illustrated, are available on request.

EACH BASE FITS CERTAIN FLAGPOLES ONLY AND THE RANGE OF SUCH OUTSIDE POLE BUTT DIAMETERS IS SHOWN UNDER EACH BASE. BEFORE SPECIFYING, BE SURE TO ASCERTAIN WHETHER THE BASE SELECTED WILL FIT THE BUTT DIAMETER OF THE POLE PROPOSED. Metal bases for ground set poles are intended for ornamental use only and should not be considered as a functional part of the pole support.



No. 2000

A	B	C
3½" to 5"	11¾" dia.	4"
5 3/16" to 6⅝"	14" dia.	4"
7⅝" to 8⅝"	16" dia.	4"
9⅝" to 11¾"	20" dia.	5"
12¾" to 14"	22" dia.	5"



No. 2001

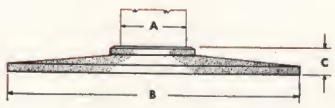
A	B	C
5" to 8"	14½" dia.	4"

No. 2002

A	B	C
8⅝" to 10"	17½" dia.	4"

No. 2003

A	B	C
10¾" to 12¾"	20½" dia.	5"



No. 1961

A	B	C
5" to 8⅝"	22" dia.	3½"

No. 1962

A	B	C
5" to 8⅝"	30" dia.	3½"

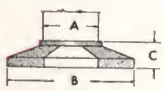
No. 1963

A	B	C
6" to 12¾"	38" dia.	3½"

No. 1964

A	B	C
8" to 16"	46" dia.	3½"

No. 1950
5" to 7⅝"



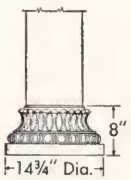
No. 1965

A	B	C
5" to 8⅝"	19⅜" oct.	4⅛"

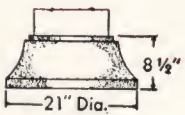
No. 1975

A	B	C
10" to 12"	23½" oct.	4⅛"

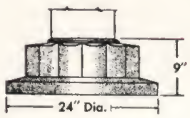
No. 1955
7" to 10"



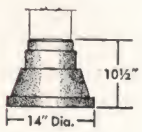
No. 1929
6⅝" to 8⅝"



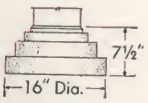
No. 1954
4½" to 12"



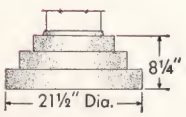
No. 1944
6" to 10"



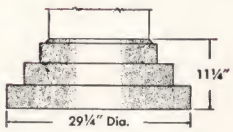
No. 1959
4½" to 8⅝"



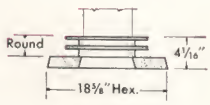
No. 1946
5½" to 7⅝"



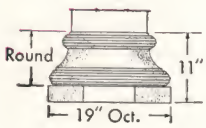
No. 1956
8" to 12"



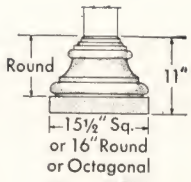
No. 1976
12¾" to 16"



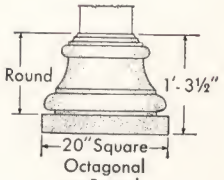
No. 1931
5" to 7⅝"



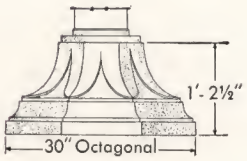
No. 1928
8" to 12"



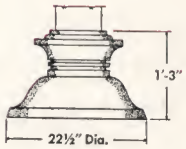
No. 1970
5" to 6⅝"



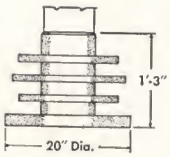
No. 1980
7" to 8⅝"



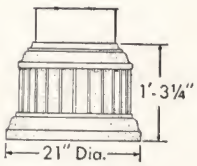
No. 1940
7" to 10¾"



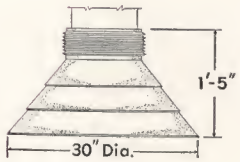
No. 1900
5½" to 8⅝"



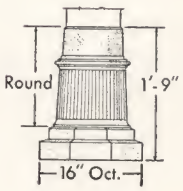
No. 1930
5½" to 10"



No. 1949
10" to 12¾"

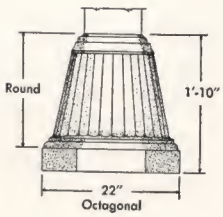


No. 1986
6" to 10¾"

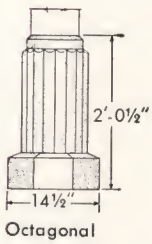


No. 1960
7" to 8⅝"

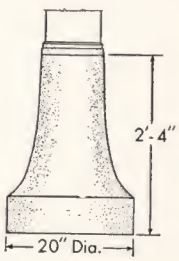
No. 1957
5½" to 8"



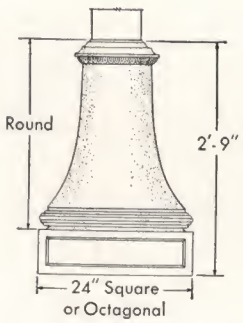
No. 1958
5½" to 10¾"



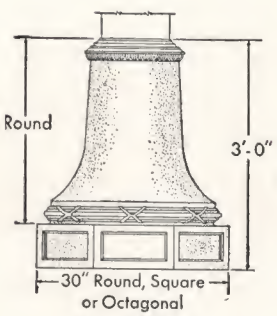
Octagonal
No. 1966
5½" to 7⅝"



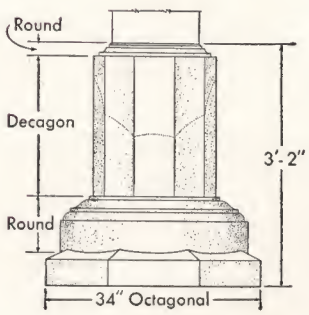
No. 1948
6" to 8⅝"



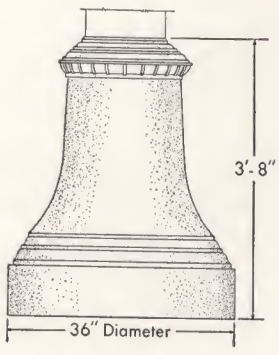
No. 1902
7" to 9⅝"



No. 1999
8" to 12"



No. 1934
10" to 14"



No. 1947
12" to 16"

For the convenience of the Architect, four different foundation arrangements are detailed for metal flagpoles and formulae for minimum foundation dimensions are indicated.

Note that all foundation tubes have a low cost, effective lightning ground spike attached directly to the base plate of tube allowing full lightning charge to pass directly into soil under foundation. The plate support welded to the ground spike distributes the weight of the foundation tube at bottom of excavation and assists in preventing tube from sinking below required level while footing and foundation tube are being poured. The lightning ground spike attached to the base plate of the foundation tube provides more positive protection against damage to the foundation by lightning than the obsolete method of using a separate ground rod alongside the foundation connected to the pole by means of a copper wire running horizontally through the side of the foundation at a point considerably above the base plate. The separate ground rod method with horizontal copper wire is not fully effective because most of the lightning charge does not by-pass over the horizontal wire but is conducted naturally to the base plate where no ground spike is present to pass the charge through the concrete footing to soil.

Hardwood wedges are recommended as being completely satisfactory for plumbing the flagpole at the top of the corrugated steel foundation tube and can be readily made at the erection site to suit the actual field conditions. Upper metal wedges are not recommended as they are difficult to modify at the erection site when necessary and usually cannot be properly prefabricated to meet final field requirements.

KEY TO STANDARD FOUNDATION DIMENSIONS

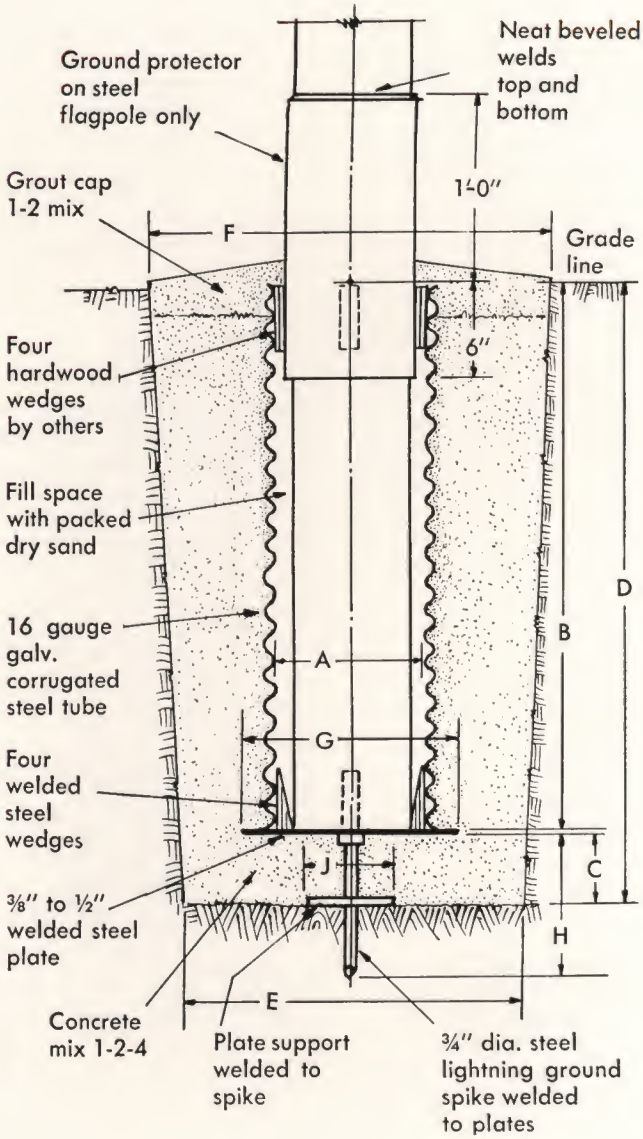
A—Inside Diameter of Foundation Tube and should be about 3" larger than outside butt diameter of flagpole
B—Distance Pole Sets in Foundation and should be 10% of pole height above ground
C—Thickness of Footing Under Base Plate and should be at least 15% in inches of pole height in feet with 4" minimum thickness
D—Depth of Excavation and should be distance pole sets in foundation plus thickness of footing
E—Diameter of Foundation At Bottom and should be at least four times outside butt diameter of pole and in no case less than 24" diameter
F—Diameter of Foundation At Top and should be at least five times outside butt diameter of pole and in no case less than 30" diameter
G—Size of Base Plate of Foundation Tube and should be at least 6" larger square than inside diameter of foundation tube
H—Length of Lightning Ground Spike Attached To Base Plate of Foundation Tube and should extend below footing for a distance at least equivalent to the footing thickness
J—Size of Support Plate Attached to Ground Spike and should be about 25% of area of base plate

Recommended foundation dimensions above are minimum for good, firm, dry soil only. If heavy frost conditions exist at site, invert Dimensions E & F. Where there are extremes of sand, muck, water, frost, etc. please consult us before finally specifying foundation dimensions. If Type III foundation is contemplated, the standard foundation dimensions should be properly increased to compensate for the additional weight of metal base, stone work, etc.

TABLE OF DIMENSIONS—GALVANIZED CORRUGATED STEEL FOUNDATION TUBES

For Pole Butt Diameters	Use This Tube Diameter	Size of Base Plate	Size of Plate Support
Up to 5½" O.D.	8" I.D.	14" x 14" x ⅜"	7" x 7" x ⅜"
5 11/16" O.D. to 7" O.D.	10" I.D.	16" x 16" x ½"	8" x 8" x ½"
7⅝" O.D. to 8⅝" O.D.	12" I.D.	18" x 18" x ½"	9" x 9" x ½"
9⅝" O.D. to 12" O.D.	15" I.D.	21" x 21" x ½"	10" x 10" x ½"
12¾" O.D. to 14" O.D.	18" I.D.	24" x 24" x ½"	12" x 12" x ½"
15" O.D. to 16" O.D.	21" I.D.	27" x 27" x ½"	14" x 14" x ½"
18" O.D. to 20" O.D.	24" I.D.	30" x 30" x ½"	15" x 15" x ½"

type I —for flagpole, without metal base



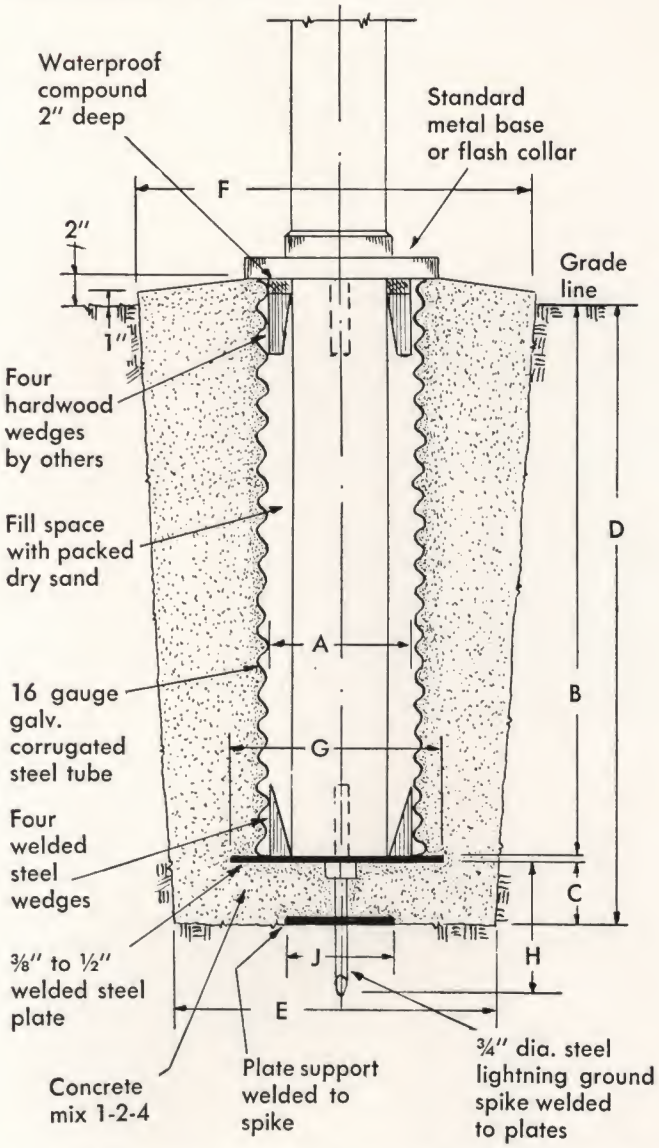
Type I is the conventional foundation arrangement for use when no metal base or flash collar is desired and utilizes the low-cost 16-ga. galvanized corrugated steel foundation tube with the effective steel lightning ground spike attached to the base plate. The corrugations make the 16-ga. tube as strong as a 10-ga. non-corrugated plain round tube and provide a better means for the concrete to key to outside of the tube.

The foundation tube extends to grade line and the grout cap is installed after main foundation has been poured and flagpole has been erected. The grout cap is usually 5" thick (3" below grade and 2" above grade) around pole and slopes to 4" thick (3" below grade and 1" above grade) at periphery.

The ground protector illustrated is intended for use on steel flagpoles only and provides additional wall thickness at grade line where rust is most likely to attack the steel pole. The ground protector offers no advantage on poles of other metals and should be omitted if the flagpole is aluminum, stainless steel or bronze.

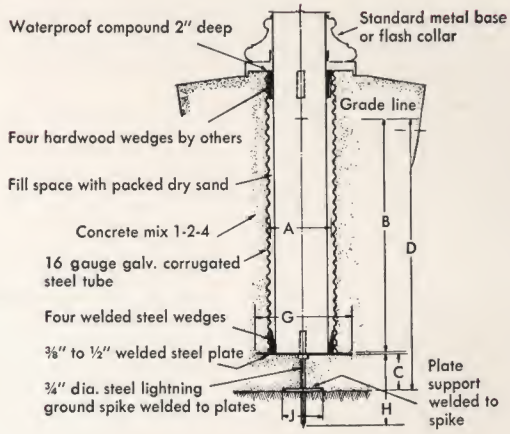
For standard dimensions of galvanized corrugated steel foundation tubes, etc. for various butt diameter flagpoles see table at bottom of preceding column.

type II-A—for flagpole with metal base and conventional concrete cap



Type II-A is also a conventional foundation arrangement for use when standard metal base or flash collar is required, a low concrete cap is desired and no stone work is used. The concrete cap extends 2" above grade around pole and slopes to 1" above grade at periphery. The shape of cap may be round, square or octagonal, etc. as preferred by the Architect. The economical 16-ga. galvanized corrugated steel foundation tube extends to top of concrete cap and cap is an integral part of the monolithic foundation. After flagpole is wedged plumb in foundation tube and before metal base or flash collar is positioned atop concrete cap, the space between flagpole and foundation tube should be thoroughly packed with clean dry sand to within 2" of top of foundation tube. Any portion of wood wedges exposed above tube should be removed and waterproof cement or mastic installed in remaining 2" high space between flagpole and foundation tube. The exposed surfaces of concrete cap should be metal-troweled to a smooth finish. The ground protector, as illustrated in Type I for steel flagpoles only, is not supplied for Type II-A poles as it serves no useful purpose when a metal base or flash collar is used. Flash collars are strictly ornamental when installed over a ground protector and both should be omitted when some other type of standard metal base is supplied. For standard dimensions of galvanized corrugated steel foundation tubes, etc. for various butt diameter flagpoles see table at bottom of left column on page 24.

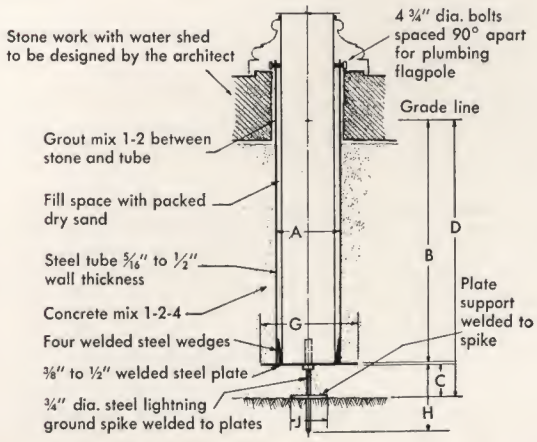
type II—for flagpole with metal base and raised concrete cap



Type II is similar to Type II-A foundation arrangement utilizing standard metal base or flash collar and 16-ga. galvanized corrugated steel foundation tube but having raised concrete cap, 6" above grade around pole and sloping to 4" above grade at periphery. These heights can be varied to suit the Architect's preference. The shape of concrete cap may be round, square, octagonal, etc. as desired.

For standard dimensions of galvanized corrugated steel foundation tubes, etc. for various butt diameter flagpoles see table at bottom of left column on page 24.

type III—for flagpole with metal base and stone work



Type III is most ideal foundation tube arrangement where standard or special designed metal base and stone work are desired. No ground protector is necessary on flagpole and no flash collar is required under the stone work. The entire foundation tube is made of seamless steel pipe having 5/16" to 1/2" wall thickness. Centering tap bolts instead of wedges are used at top of foundation tube. The tube terminates about 2" above top of stone work. The inside diameter of the steel pipe foundation tube should be 2½" to 3" larger than outside butt diameter of the flagpole. The standard steel pipe foundation tubes have the following inside diameters and wall thicknesses: 8" I.D. x .322" wall; 9" I.D. x .342" wall; 10" I.D. x .365" wall; 11" I.D. and 12" I.D. x .375" wall; 13" I.D., 14" I.D., 15" I.D., 17" I.D. and 19" I.D. x .500" wall.

FLAGPOLE FITTINGS

specifications for regular steel pole fittings

Ball—The ball shall be .... inches in diameter (see recommended sizes in tables of pole dimensions) and constructed of 20-oz. copper covered with genuine 23-karat gold leaf over three coats of waterproof paint and one coat of waterproof gold size. Ball shall have flush seam and be mounted on ¾-in. seamless brass tube over ⅝-in. non-corrodible rod attached to truck.

Standard Truck—(To be used on flagpoles having top diameters up to 3½-in. only.) Provide a Lingo standard non-fouling ball bearing revolving truck with (galvanized cast iron) (bronze) body, revolving on manganese bronze spindle with ball race containing twenty-six ¼-in. stainless steel balls. Truck to be fitted with two 2⅜-in. dia. nylon-bushed bronze sheaves rotating on ⅜-in. tobin bronze pins.

Extra Heavy Truck—(To be used on flagpoles having top diameters 4-in. or over.) Provide a Lingo extra heavy non-fouling all bronze ball bearing revolving truck, revolving on manganese bronze spindle with ball race containing thirty ¼-in. stainless steel balls. Truck to be fitted with two 4-in. dia. nylon-bushed bronze sheaves rotating on ½-in. monel metal pins.

Halyards—Provide two ⅜-in. dia. U. S. standard manila bolt rope halyards (Alternate—5/16-in. #10 or ⅜-in. #12 cotton braided rope halyards) each with two bronze swivel snaps for securing to flag.

Cleats—Provide two 9-in. (cast iron galvanized) (cast bronze) cleats each tapped to pole with two 5/16-in. flat head (galvanized stove bolts) (brass machine screws).

Note Regarding Trucks—Lingo trucks are of revolving type. Stationary non-revolving trucks will not shift with wind causing flag to wrap around pole.

Notes Regarding Halyard Rope and Revolving Cleats—Manila or cotton rope gives excellent service and can be mildew treated when required. We can supply cotton rope having bronze center which is more costly but exceptionally strong and not easily cut by petty thieves. Avoid wire rope and sash chain halyards because whipping of metal against pole destroys pole finish. Revolving cleats can be furnished but are not recommended as being practical in service.

description of dispensable extras

Cleat Covers—(1 per cleat) Standard galvanized cast iron box, built-in hinge and hasp arrangement, separate galvanized staple and 6-lever padlock; box and staple attached to pole with five tamper-proof screws inside box.

Spread Eagle on Ball—Heavy copper, hand made, on ⅝-in. to ¾-in. rod; eagle and ball covered with 23 karat genuine gold leaf over three coats of waterproof paint and one coat of waterproof size. Wingspread in inches should be approximately 50% of pole height in feet. Standard sizes are 18" to 48" in 6" multiples.

Eagle Weathervane—Heavy copper eagle, balls and vane; rod, cardinal points and scrolls, bronze. Eagle, balls and cardinal points covered with 23 karat genuine gold leaf over three coats of waterproof paint and one coat of waterproof size. Wingspread in inches should be approximately 50% of pole height in feet. Standard sizes are 24" to 48" in 6" multiples.

Arrow Weathervane—Heavy copper arrow and balls; rod, cardinal points and scrolls bronze. Arrow, balls and cardinal points covered with 23 karat genuine gold leaf over three coats of waterproof paint and one coat of waterproof size. Arrow length in inches should be approximately 50% of pole height in feet. Standard sizes are 24" to 48" in 6" multiples.

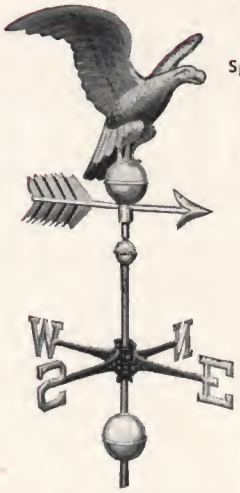
For Metal Bases—See pages 22 & 23.

For Types of Foundation Tubes—See pages 24 & 25.

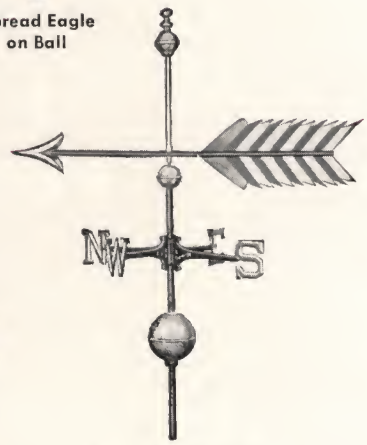
Tubular Steel Horizontal Yard-arms or Cross-arms for Single-mast Poles are also furnished to order in cases where it is desired to fly at least three flags on the pole; the American flag at the top and signal pennants or competing school flags from the ends of the yard-arm. The yard-arm should be located at the ¾ elevation of pole and length should be 25% of pole height. Bronze swivel blocks, standard halyards, flag snaps and extra cleats are supplied with each yard-arm.

Tubular Steel Gaffs and Fittings for Single-mast poles can also be supplied if desired with the yard-arm arrangement. The gaff length should be about ⅔ of yard-arm length and should be projected at an angle of 60 degrees from the vertical.

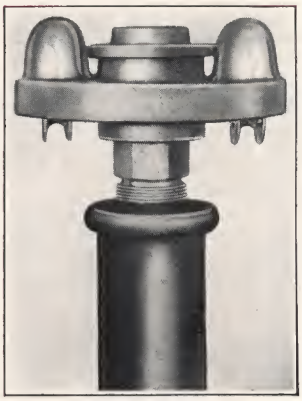

Spread Eagle on Ball

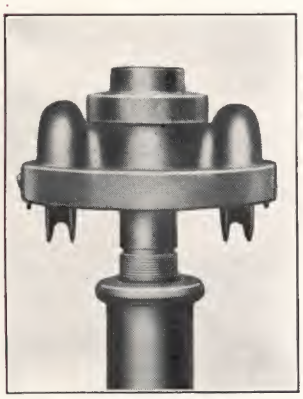


Eagle Weathervane



Arrow Weathervane


Standard Truck


Extra Heavy Truck


Gold Leafed Copper Ball


Cleat


Cleat Cover

section 2

LINGO
VERTICAL WALL SET
flagpoles

35-ft. Heavy Duty Steel Flagpole
with W-19 Wall Brackets
St. Annunciata School
Chicago, Ill.
Architect: Thomas E. Cooke
Chicago

ALUMINUM

STEEL

STAINLESS STEEL

BRONZE

aluminum—steel—stainless steel—bronze

Vertical wall set flagpoles are made in aluminum, steel, stainless steel and bronze, all of tapered construction, standardized in various lengths, diameters, wall thicknesses, etc., as shown in the table of dimensions. Nine different standard wall bracket arrangements are detailed for the support of the poles (see page 30). The brackets are made to order for individual projects and are especially designed so that the pole will clear the particular overhang of the capstone, etc. The pole should be housed in the bracket arrangement for a vertical distance of not less than 10% of the overall pole length. Bracket arrangements W-16, W-17, W-18, W-19, W-23 and W-24 each consist of two individual brackets but a third bracket (uppermost) can be furnished for greater support or enhanced appearance, if so preferred by the Architect. Bracket arrangements W-20, W-21 and W-22 each consist of one complete bracket but a separate single upper bracket of the W-16, W-17, W-18, W-19, W-23 or W-24 type can be added if so desired. When standard bracket arrangements are so supplemented, the Architect should clearly revise the standard specifications accordingly. FOR STANDARD SPECIFICATIONS, PLEASE SEE PAGE 29.

Aluminum flagpoles are furnished of cone tapered construction in standard lengths from 15 to 44 feet and are supported by either heli-arc welded fabricated aluminum brackets or by less costly electric welded fabricated steel brackets. The aluminum brackets have a centerless 80-grit satin finish, waxed, and the steel brackets are hot-dip galvanized. All welding is done by certified welding operators. The aluminum poles are made of 6063-T6 seamless extruded aluminum, cold rolled, with .188-in. minimum wall thickness throughout and the tapered portion has a uniform conical taper of 1-in. in approximately each 5½ feet. The diameters, tapered lengths and wall thickness shown in the table of dimensions are the minimum consistent with good engineering practice for aluminum poles. The exterior pole surface is machined to a centerless 80-grit satin finish then waxed. Before shipment, each pole is spirally wrapped with heavy paper, covered with burlap, wood-stripped and steel-banded for protection during transit. NO PAINTING OF ALUMINUM POLES IS REQUIRED OR RECOMMENDED (See page 14). The poles can be shipped in one piece without field joints but a substantial saving in freight cost will result if the 38½ ft. and 44 ft. poles are each shipped in two pieces with a self-aligning internal splicing sleeve arrangement requiring no field welding or grinding.

Steel flagpoles are furnished in Light Duty and Heavy Duty tapered construction in standard lengths from 15 to 30 feet and are supported by electric welded fabricated steel wall brackets. Steel poles and brackets are usually painted but can be hot-dip galvanized if for locations where salt air prevails. Light Duty poles are recommended where installation is required on comparatively light building walls or where low cost is a factor. The poles are of special cone tapered construction with wall thickness varying from .120-in. to .156-in., and the tapered portion has a uniform taper of 1" in each 8½ to 10 feet. Heavy Duty steel poles are of standard cone tapered construction with ¼-in. minimum wall thickness throughout and the tapered portion has a uniform conical taper of 1-in. in approximately each 7 feet.

Stainless steel flagpoles are made to order only of genuine Venetian Entasis Tapered construction in standard lengths from 20 to 30 feet and are supported by fabricated stainless steel brackets. The stainless steel is Type #304 polished to a #4 finish. The wall thickness of the poles varies from .226-in. to .247-in. The ball is supplied in stainless steel. The truck and cleats are supplied in Monel-S metal (similar to stainless steel). The swivel snaps are furnished in chrome-plated bronze.

Bronze flagpoles are made to order only of genuine Venetian Entasis Tapered construction in standard lengths from 20 to 30 feet and are supported by fabricated bronze brackets. The material for pole and brackets is commercial bronze and both pole and brackets are polished to a standard brush finish and then clear lacquered. The wall thickness varies from .226-in. to .247-in. The ball is gold leafed copper, and the truck, cleats and swivel snaps are all-bronze.

dimensions

Overall Length in Feet	Pole Type and Metal	Outside Diameter in Inches			Pole Wall Thickness	Pole Weight Lbs.	Tapered Portion	Cylindrical Butt Portion
		Butt	Top	Ball				
15	Standard Type Aluminum	4	2⅜	4	.188	40	9′ 0″	6′ 0″
20	Standard Type Aluminum	4½	2⅞	5	.188	60	9′ 0″	11′ 0″
23	Standard Type Aluminum	5	3¼	5	.188	80	9′ 8″	13′ 4″
28	Standard Type Aluminum	5½	3½	6	.188	110	11′ 0″	17′ 0″
33	Standard Type Aluminum	6	3½	6	.188	140	13′ 9″	19′ 3″
38½	Standard Type Aluminum	7	3½	6	.188	200	19′ 3″	19′ 3″
44	Standard Type Aluminum	8	3½	8	.188	250	24′ 9″	19′ 3″
15	Light Duty Steel	3	1⅞	4	.120	75	12′ 0″	3′ 0″
20	Light Duty Steel	4	2⅜	5	.134	105	15′ 0″	5′ 0″
25	Light Duty Steel	4½	2⅜	5	.156	175	19′ 0″	6′ 0″
30	Light Duty Steel	5	2⅜	6	.156	225	23′ 0″	7′ 0″
20	Heavy Duty Steel	5	3¼	5	.250	245	12′ 6″	7′ 6″
25	Heavy Duty Steel	5⅝	3¼	5	.250	330	16′ 6″	8′ 6″
30	Heavy Duty Steel	6	3¼	6	.250	420	19′ 6″	10′ 6″
20	Standard Stainless Steel	4	2½	5	.226	150	13′ 0″	7′ 0″
25	Standard Stainless Steel	4½	2⅞	5	.237	215	16′ 0″	9′ 0″
30	Standard Stainless Steel	5	2⅞	6	.247	285	19′ 0″	11′ 0″
20	Standard Bronze	4	2½	5	.226	165	13′ 0″	7′ 0″
25	Standard Bronze	4½	2⅞	5	.237	235	16′ 0″	9′ 0″
30	Standard Bronze	5	2⅞	6	.247	320	19″ 0′	11′ 0″

specifications

for aluminum flagpole

Furnish and erect where shown on plans a Cone Tapered Aluminum flagpole for vertical wall setting, complete with all fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, New Jersey. Flagpole to be Standard Type . . . . feet overall length with . . . . inches outside butt diameter tapering conically through upper . . . . feet . . . . inches to . . . . inches outside top diameter. The pole shall be machine-made of 6063-T6 seamless extruded aluminum, with a minimum wall thickness of .188-in. and shall have a uniform conical taper of 1″ in each 5′6″ throughout the tapered portion. The pole shall have a smooth uninterrupted exterior surface throughout without offsets and shall be shipped in one piece without field joints unless a substantial saving in freight cost is possible by a two piece shipment. The exterior of the pole shall be machined to a centerless 80-grit satin finish and then waxed. Painting of the aluminum will not be permitted. Before shipment, pole shall be spirally wrapped with heavy paper, covered with burlap, wood-stripped and steel-banded for protection during transit. If pole is shipped in two pieces, the field joint shall consist of a snug-fitting, precision-made, internal splicing sleeve arrangement so designed that self-alignment and locking of pole sections in field are assured without use of field welding, shims, wedges, aligning bolts, internal tie rods, etc.

The flagpole shall be equipped with one . . . . inch diameter 14-ga. aluminum ball having flush seam and a centerless 80-grit satin finish, waxed, mounted on a ⅝-in. dural rod attached to truck; one standard non-fouling ball bearing revolving truck having aluminum body, aluminum spindle, stainless steel balls, aluminum sheaves and dural pins; one 5/16-in. #10 cotton braided rope halyard with two aluminum swivel snaps; one 9-in. cast aluminum cleat and one set of standard (electric welded galvanized fabricated steel) (heli-arc welded fabricated aluminum) wall brackets, Design No. (W-16) (W-17) (W-18) (W-19) (W-20) (W-21) (W-22) (W-23) (W-24) and supplied with (galvanized steel) (duralumin) anchor bolts, etc.

specifications

for steel flagpole

Furnish and erect where shown on plans a Cone Tapered (Light Duty) (Heavy Duty) steel flagpole for vertical wall setting, complete with all fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, New Jersey. Flagpole to be . . . . feet overall length with . . . . inches outside butt diameter tapering conically through the upper . . . . feet to . . . . inches outside top diameter with . . . . inch wall thickness throughout. The pole shall have a smooth uninterrupted exterior surface throughout without visible joints and offsets and shall be shipped in one piece without field joints. The flagpole shall be painted one shop coat of red lead and oil.

The flagpole shall be equipped with one . . . . inch diameter gold leafed copper flush seam ball with brass ball rod, one standard non-fouling ball bearing revolving truck (Alternate: Bronze pole cap with bronze swivel block for Light Duty poles), one 9-in. galvanized cleat, one ⅜-in. manila bolt rope halyard with two bronze swivel snaps and one set of painted standard steel wall brackets, Design No. (W-16) (W-17) (W-18) (W-19) (W-20) (W-21) (W-22) (W-23) (W-24) and supplied with steel anchor bolts, etc. (Note to Specifications Writer: If pole and bracket arrangement are to be galvanized after fabrication by the hot-dipped process, please so indicate and omit painting specifications.)

specifications

for stainless steel flagpole

Furnish and erect where shown on plans a standard Genuine Venetian Entasis Tapered stainless steel flagpole for vertical wall setting, complete with all fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, New Jersey. Flagpole to be . . . . feet overall length with . . . . inches outside butt diameter tapering with Venetian Entasis through the upper . . . . feet to . . . . inches outside top diameter. The flagpole shall be made of Type #304 stainless steel having a minimum wall thickness of . . . . inches throughout. The pole shall have a smooth uninterrupted exterior surface throughout without visible joints and offsets and shall be shipped in one piece without field joints. The exterior surface of the flagpole shall have a #4 standard finish and before shipment the pole shall be spirally wrapped with heavy paper, covered with burlap, wood-stripped and steel-banded for protection during transit.

The flagpole shall be equipped with one . . . . inch diameter spun stainless steel flush seam ball with stainless steel ball rod; one standard ball bearing revolving truck having Monel-S body with spindle and sheaves of same metal and finish, stainless steel balls and sheave pins; one 5/16-in. #10 cotton braided rope halyard with two chrome plated bronze swivel snaps; one 9-in. Monel-S cleat and one set of standard fabricated stainless steel wall brackets, Design No. (W-16) (W-17) (W-18) (W-19) (W-20) (W-21) (W-22) (W-23) (W-24) having #4 finish and supplied with stainless steel anchor bolts, etc.

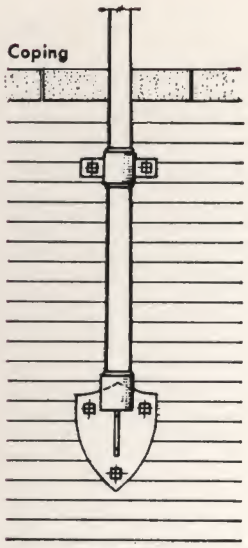
specifications

for bronze flagpole

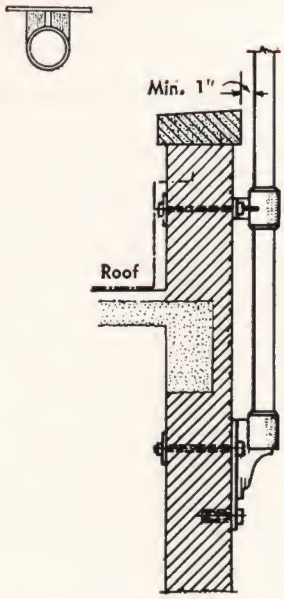
Furnish and erect where shown on plans a standard Genuine Venetian Entasis Tapered bronze flagpole for vertical wall setting, complete with all fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, New Jersey. Flagpole to be . . . . feet overall length with . . . . inches outside butt diameter tapering with Venetian Entasis through the upper . . . . feet to . . . . inches outside top diameter. The flagpole shall be made of commercial bronze having a minimum wall thickness of . . . . inches throughout. The pole shall have a smooth uninterrupted exterior surface throughout without visible joints or offsets and shall be shipped in one piece without field joints. The exterior surface of the flagpole shall have a standard brush finish, clear lacquered and before shipment the pole shall be spirally wrapped with heavy paper, covered with burlap, wood-stripped and steel-banded for protection during transit.

The flagpole shall be equipped with one . . . . inch diameter gold leafed spun copper flush seam ball with brass ball rod, one all-bronze standard ball bearing revolving truck, one 5/16-in. #10 cotton braided rope halyard with two bronze swivel snaps, one 9-in. bronze cleat and one set of standard fabricated bronze wall brackets, Design No. (W-16) (W-17) (W-18) (W-19) (W-20) (W-21) (W-22) (W-23) (W-24) having standard brush finish, clear lacquered and supplied with bronze anchor bolts, etc.

standard brackets



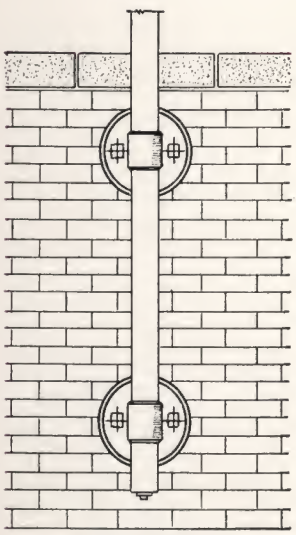
W-16



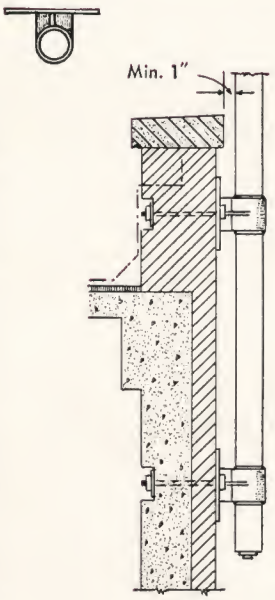
W-16

W-17

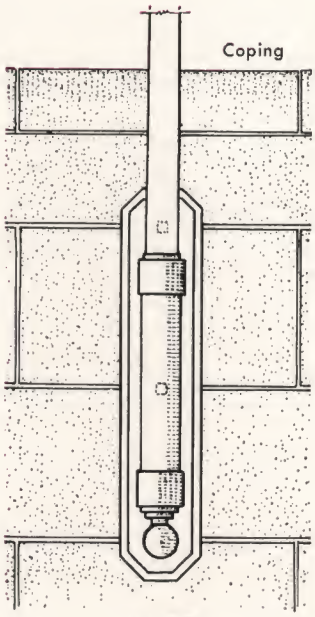
W-18



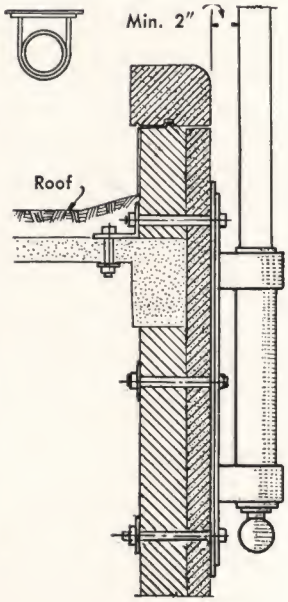
W-19



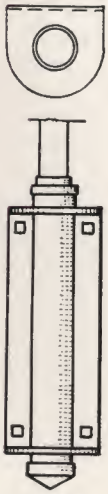
W-19



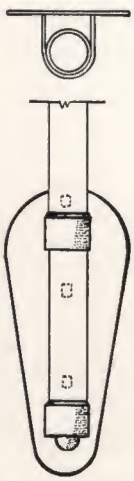
W-20



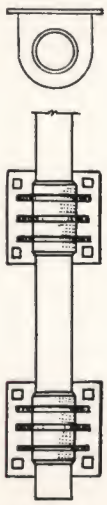
W-20



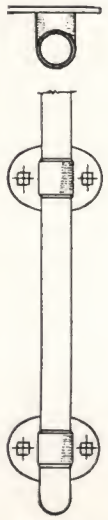
W-21



W-22



W-23



W-24

wall bracket dimensions, anchor bolt spacing, etc.

W-16

Pole Butt Diameter	Wall Plate	Horizontal Bolt Spacing	Vertical Bolt Spacing	Bolt Diameter
UPPER BRACKET				
3″ to 4″	10″ x 3″ x ⅜″	7″ ℄ to ℄		⅝″
4½″ to 6″	12″ x 4″ x ½″	9″ ℄ to ℄		¾″
6⅝″ to 8″	14″ x 6″ x ½″	11″ ℄ to ℄		¾″
LOWER BRACKET				
3″ to 4″	10″ x 13″ x ⅜″	7″ ℄ to ℄	9¼″ ℄ to ℄	⅝″
4½″ to 6″	12″ x 15″ x ½″	9″ ℄ to ℄	11¼″ ℄ to ℄	¾″
6⅝″ to 8″	14″ x 17″ x ½″	11″ ℄ to ℄	13¼″ ℄ to ℄	¾″

Note: Vertical distance between brackets measured from centerline of top bolts of lower bracket upward to centerline of upper bracket and must be at least 10% of overall pole length.

W-17

Pole Butt Diameter	Wall Plate	Horizontal Bolt Spacing	Bolt Diameter
UPPER AND LOWER BRACKETS			
3″ to 4″	10″ x 3″ x ⅜″	7″ ℄ to ℄	⅝″
4½″ to 6″	12″ x 4″ x ½″	9″ ℄ to ℄	¾″
6⅝″ to 8″	14″ x 6″ x ½″	11″ ℄ to ℄	¾″

Note: Vertical distance between brackets measured from center line of lower bracket upward to centerline of upper bracket and must be at least 10% of overall pole length.

W-18

Pole Butt Diameter	Wall Plate	Horizontal Bolt Spacing	Vertical Bolt Spacing	Bolt Diameter
UPPER BRACKET				
3″ to 4″	10″ x 3″ x ⅜″	7″ ℄ to ℄		⅝″
4½″ to 6″	12″ x 4″ x ½″	9″ ℄ to ℄		¾″
6⅝″ to 8″	14″ x 6″ x ½″	11″ ℄ to ℄		¾″
LOWER BRACKET				
3″ to 4″	10″ x 10″ x ⅜″	7″ ℄ to ℄	7″ ℄ to ℄	⅝″
4½″ to 6″	12″ x 12″ x ½″	9″ ℄ to ℄	9″ ℄ to ℄	¾″
6⅝″ to 8″	14″ x 14″ x ½″	11″ ℄ to ℄	11″ ℄ to ℄	¾″

Note: Vertical distance between brackets measured from center of lower bracket plate upward to centerline of upper bracket and must be at least 10% of overall pole length.

W-19

Pole Butt Diameter	Wall Plate	Horizontal Bolt Spacing	Bolt Diameter
UPPER AND LOWER BRACKETS			
3″ to 4″	10″ dia. x ⅜″	7″ ℄ to ℄	⅝″
4½″ to 6″	12″ dia. x ½″	9″ ℄ to ℄	¾″
6⅝″ to 8″	14″ dia. x ½″	11″ ℄ to ℄	¾″

Note: Vertical distance between brackets measured from centerline of lower bracket upward to center line of upper bracket and must be at least 10% of overall pole length.

W-20

Overall Pole Length	Pole Butt Diameter	Wall Plate	Vertical Bolt Spacing	Bolt Diameter
15′	3″ to 4″	6″ x 2′8″ x ½″	11″ ℄ to ℄	⅝″
20′	4″ to 5″	8″ x 3′4″ x ½″	15½″ ℄ to ℄	⅝″
23′	5″	8″ x 3′9″ x ½″	17½″ ℄ to ℄	⅝″
25′	4½″ to 5⅝″	9″ x 3′11″ x ½″	18½″ ℄ to ℄	¾″
28′	5½″	9″ x 4′3″ x ½″	20½″ ℄ to ℄	¾″
30′	5″ to 6″	9″ x 4′5″ x ½″	21½″ ℄ to ℄	¾″
33′	6″	9″ x 4′9″ x ½″	23½″ ℄ to ℄	¾″
38½′	7″	10″ x 5′3″ x ½″	26½″ ℄ to ℄	1″
44′	8″	11″ x 5′10″ x ½″	30″ ℄ to ℄	1″

W-21

Over-all Pole Length	Pole Butt Diameter	Wall Plate	Horizontal Bolt Spacing	Vertical Bolt Spacing	Bolt Diam-eter
15′	3″ to 4″	10″ x 1′1″ x ⅜″	7″ ℄ to ℄	10″ ℄ to ℄	⅝″
20′	4″ to 5″	12″ x 1′7″ x ½″	9″ ℄ to ℄	16″ ℄ to ℄	⅝″
23′	5″	12″ x 1′11″ x ½″	9″ ℄ to ℄	20″ ℄ to ℄	⅝″
25′	4½″ to 5⅝″	12″ x 2′1″ x ½″	9″ ℄ to ℄	22″ ℄ to ℄	¾″
28′	5½″	12″ x 2′5″ x ½″	9″ ℄ to ℄	26″ ℄ to ℄	¾″
30′	5″ to 6″	12″ x 2′7″ x ½″	9″ ℄ to ℄	28″ ℄ to ℄	¾″
33′	6″	12″ x 2′11″ x ½″	9″ ℄ to ℄	32″ ℄ to ℄	¾″
38½′	7″	14″ x 3′5″ x ½	11″ ℄ to ℄	38″ ℄ to ℄	¾″
44′	8″	14″ x 4′0″ x ½″	11″ ℄ to ℄	45″ ℄ to ℄	¾″

W-22

Overall Pole Length	Pole Butt Diameter	Wall Plate	Vertical Bolt Spacing	Diameter
15′	3″ to 4″	12″ x 2′2″ x ⅜″	7″ ℄ to ℄	⅝″
20′	4″ to 5″	13″ x 2′8″ x ½″	10″ ℄ to ℄	⅝″
23′	5″	13″ x 3′0″ x ½″	12″ ℄ to ℄	⅝″
25′	4½″ to 5⅝″	14″ x 3′4″ x ½″	12″ ℄ to ℄	¾″
28′	5½″	14″ x 3′8″ x ½″	14″ ℄ to ℄	¾″
30′	5″ to 6″	14″ x 3′10″ x ½″	15″ ℄ to ℄	¾″
33′	6″	14″ x 4′2″ x ½″	17″ ℄ to ℄	¾″
38½′	7″	15″ x 4′8″ x ½″	20″ ℄ to ℄	1″
44′	8″	16″ x 5′3″ x ½″	23½″ ℄ to ℄	1″

W-23

Pole Butt Diameter	Wall Plate	Horizontal Bolt Spacing	Vertical Bolt spacing	Bolt Diameter
UPPER AND LOWER BRACKETS				
3″ to 4″	10″ x 10″ x ⅜″	7″ ℄ to ℄	7″ ℄ to ℄	⅝″
4½″ to 6″	12″ x 12″ x ½″	9″ ℄ to ℄	9″ ℄ to ℄	¾″
6⅝″ to 8″	14″ x 14″ x ½″	11″ ℄ to ℄	11″ ℄ to ℄	¾″

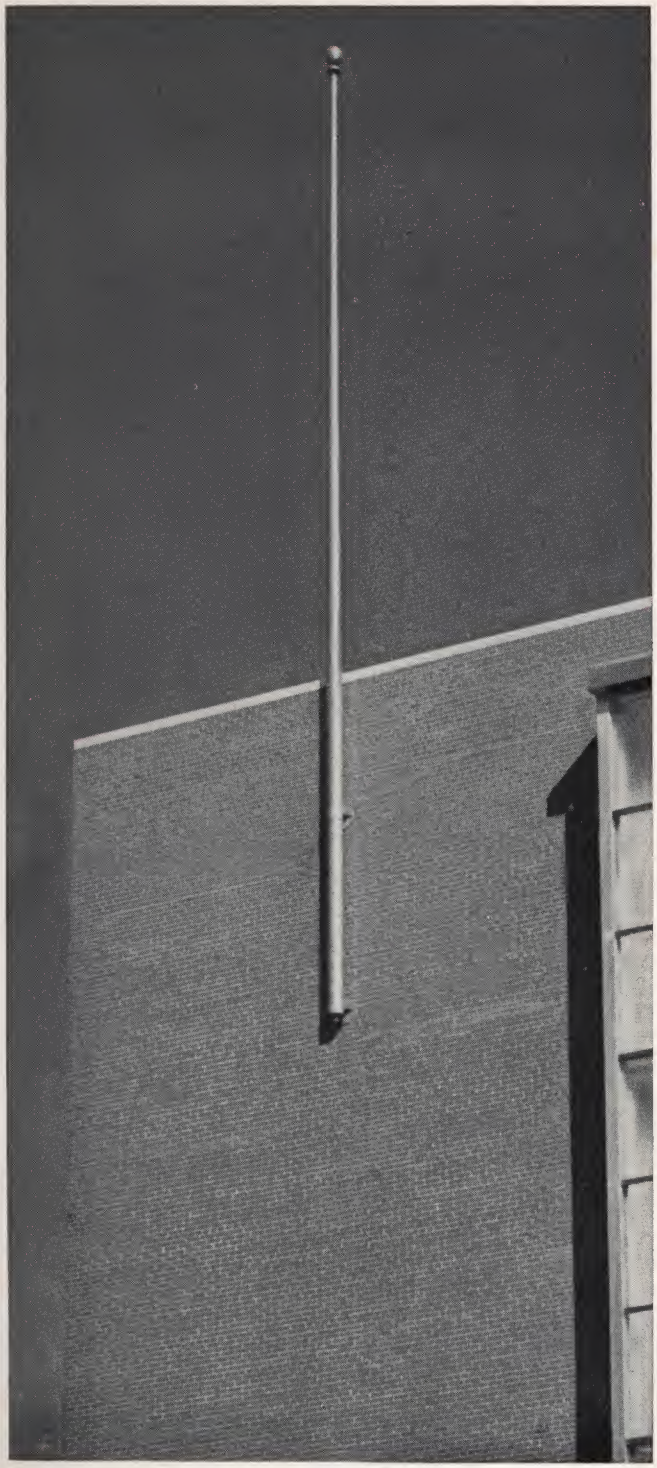
Note: Vertical distance between brackets measured from centerline of lower bracket plate upward to centerline of upper bracket plate and must be at least 10% of overall pole length.

W-24

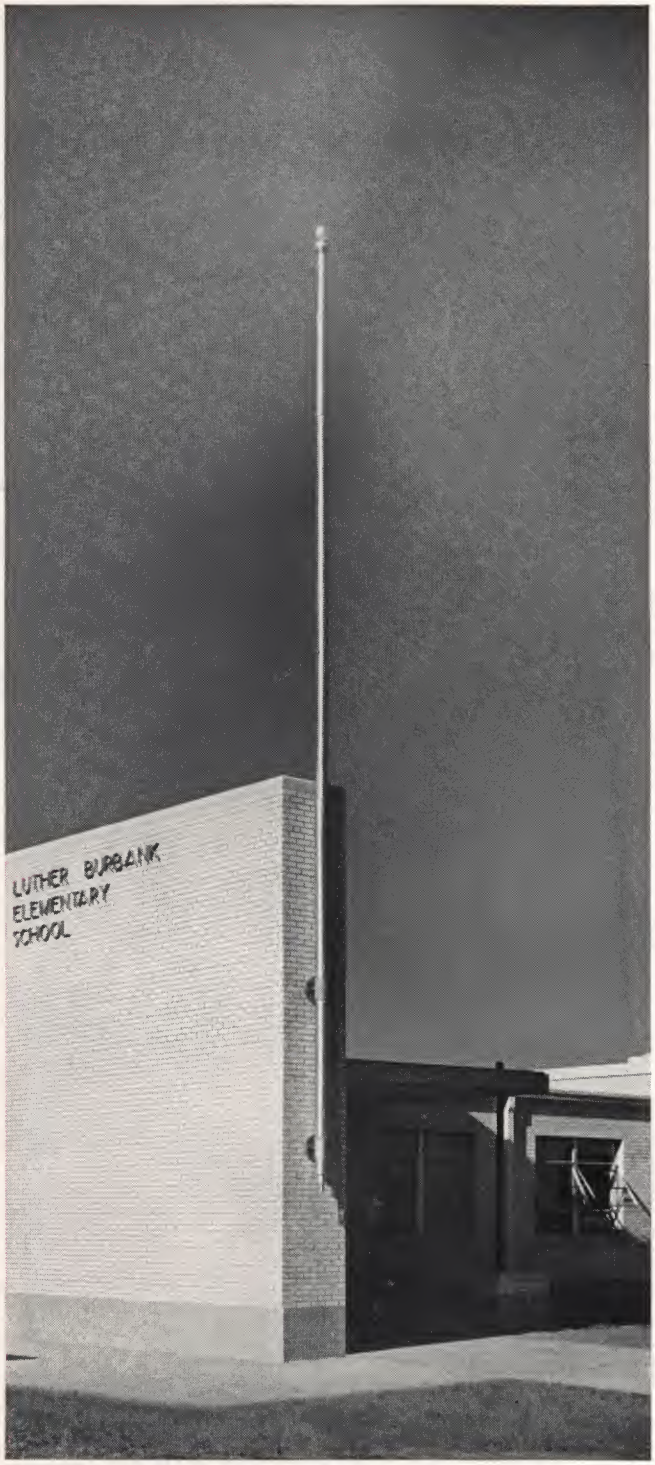
Pole Butt Diameter	Wall Plate	Horizontal Bolt Spacing	Bolt Diameter
UPPER AND LOWER BRACKETS			
3″ to 4″	10″ x 6″ x ⅜″	7″ ℄ to ℄	⅝″
4½″ to 6″	12″ x 8″ x ½″	9″ ℄ to ℄	¾″
6⅝″ to 8″	14″ x 10″ x ½″	11″ ℄ to ℄	¾″

Note: Vertical distance between brackets measured from centerline of lower bracket upward to center line of upper bracket and must be at least 10% of overall pole length.

20-ft. Cone Tapered Aluminum Flagpole with W-17 Wall Brackets
Teamsters Joint Council Bldg.
Portland, Ore.
Architect: Morgan Hartford Portland



44-ft. Cone Tapered Aluminum Flagpole
with W-19 Galv. Steel Wall Brackets
The Hecht Store
Parkington, Arlington, Va.
Architects: Kahn & Jacobs,
New York City



33 ½-ft. Cone Tapered Standard Type Aluminum Flagpole
with W-19 Galv. Steel Wall Brackets
Luther Burbank Elementary School
Tulsa, Okla.
Architect: John W. Robb
Tulsa

section 3

LINGO
OUTRIGGER
flagpoles

WITH OR WITHOUT BRACES

ALUMINUM

STEEL

STAINLESS STEEL

BRONZE

Three of Seven 27-ft. Genuine Venetian
Entasis Tapered Stainless Steel Flagpoles
U. S. Steel Main Office Building
Pittsburgh, Penna.

Architects: Harrison, Abramovitz & Cocken
New York, N. Y.

OUTRIGGER *flagpoles*

aluminum—steel—stainless steel—bronze with or without braces

Outrigger flagpoles are made in aluminum, steel, stainless steel and bronze, all of tapered construction, standardized in various lengths, diameters, wall thicknesses, etc., as shown in the tables of dimensions below and on page 36. Twelve different standard outrigger base styles are detailed (see pages 35 and 37). These bases are full strength supporting castings, not merely hood or shell castings. All bases project the poles at a fixed angle of 45 degrees except that Base Style B-22 projects the pole at a fixed angle of 30 degrees from the vertical. Each base fits certain flagpoles only depending upon butt diameter of flagpole. Base Styles B-15, B-15A, B-16, B-16A, and B-18 are for pole butt diameters up to 3½-in. maximum. Base Styles B-20 and B-22 are for pole butt diameters up to 4-in. maximum. Base Styles B-12, B-12A, B-17, B-19 and B-23 are for pole butt diameters up to 5-in. maximum. Bases are normally arranged with concealed through bolts fastened to base from rear of wall. However, when wall construction necessitates installation of anchor bolts from front of wall, the base is attached to a supplemental standard mounting plate (of same metal as base) on outside face of wall and the four anchor bolts of mounting plate pass into the wall from the outside (see typical details in lower portion of Page 35). The ½-in. thick mounting plate is 3-in. wider and longer than the indicated base dimensions on wall. The mounting plate is square for B-15 or B-15A bases and is rectangular for all other bases.

Cone Tapered Standard Type Aluminum flagpoles are made of 6063-T6 seamless extruded aluminum, cold rolled, with .188-in. minimum wall thickness throughout and the tapered portion has a uniform conical taper of 1-in. in approximately each 5½ feet. The exterior pole surface is machined to a centerless 80-grit satin finish then waxed. Before shipment, each pole is spirally wrapped with heavy paper, covered with burlap, wood-stripped and steel banded for protection during transit. NO PAINTING OF ALUMINUM POLES IS REQUIRED OR RECOMMENDED (See page 14). Aluminum flagpoles, unbraced or braced, have all aluminum fittings (except that halyard rope is cotton and swivel block is chrome plated bronze). Unplated bronze fittings should never be used on aluminum poles and, conversely, aluminum fittings should never be used on bronze poles because of serious galvanic corrosive action between the two metals.

Cone Tapered Light Duty steel flagpoles are made of high strength cold rolled seamless steel with wall thickness varying from .120-in. to .134-in. throughout and the tapered portion has a uniform conical taper of 1-in. in each 8½ to 10 feet. Steel poles, unbraced or braced, have all bronze fittings (except that halyard rope is cotton).

Standard Stainless Steel flagpoles are made of genuine Venetian Entasis Tapered construction and the stainless steel is Type #304, having wall thickness varying from .203-in. to .216-in. throughout depending upon pole butt diameter. The stainless steel is polished to a #4 finish. Each stainless steel pole, unbraced or braced, has Monel-S metal base (similar to stainless steel), Monel-S acorn (Alternate: stainless steel ball), Monel-S pole cap, chrome plated bronze swivel block, Monel-S cleat, cotton halyard rope and chrome plated bronze swivel snaps. If braced, the stainless steel pole also has brace collar, couplers, escutcheon plates, etc. in Monel-S metal. The brace rods are stainless steel. Castings made of Monel-S metal (Ni 63, Cu 30, Fe 2, Si 4 and Mn .7) have the appearance of stainless steel and are stronger.

12-ft. Stainless Steel Flagpole with B-20 Monel-S Base
Illinois Bell Telephone Co.
Chicago, Ill.
Architects: Holabird, Root & Burgee

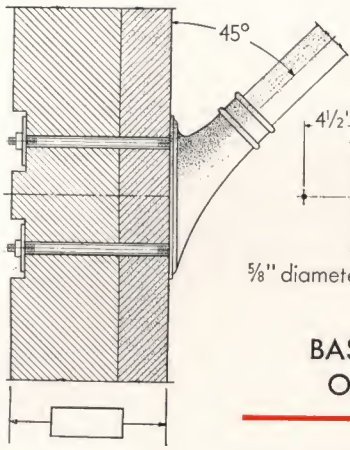
Standard Bronze flagpoles are made of genuine Venetian Entasis Tapered construction and the material is commercial bronze, having wall thickness varying from .203-in. to .216-in. throughout depending upon pole butt diameter. The pole and bronze parts are polished to a standard brush finish and then clear lacquered. Bronze poles, unbraced or braced, have all bronze fittings (except that halyard rope is cotton).

The cleat or rope fastener is normally located on the pole near the base. However, if the flag must be operated from a lower elevation and the cleat is attached to the building wall below the pole base, then a standard auxiliary halyard arrangement can be furnished to pull the main halyard rope into neat alignment with the pole.

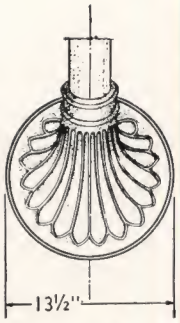
dimensions—for flagpoles, 8 to 15 feet, without braces (for specifications, see page 38)

Standard Length — Feet	Pole Type and Metal	Butt Dia. — Inches	Top Dia. — Inches	Wall Thickness — Inches	Tapered Portion — Feet	Cylindrical Butt Portion — Feet	Recommended Base Styles	Type Base Metal
8	Standard Type Aluminum	3½	2⅜	.188	6	2	See Note 1	Aluminum
10	Standard Type Aluminum	3½	2⅜	.188	6	4	See Note 1	Aluminum
12	Standard Type Aluminum	3½	2⅜	.188	6	6	See Note 1	Aluminum
15	Standard Type Aluminum	4	2⅜	.188	9	6	See Note 2	Aluminum
10	Light Duty Steel	3	2	.120	8½	1½	See Note 1	Bronze
12	Light Duty Steel	3	2	.120	8½	3½	See Note 1	Bronze
10	Standard Stainless Steel	2⅞	1½	.203	6½	3½	See Note 1	Monel-S
12	Standard Stainless Steel	2⅞	1½	.203	8	4	See Note 1	Monel-S
10	Standard Bronze	2⅞	1½	.203	6½	3½	See Note 1	Bronze
12	Standard Bronze	2⅞	1½	.203	8	4	See Note 1	Bronze

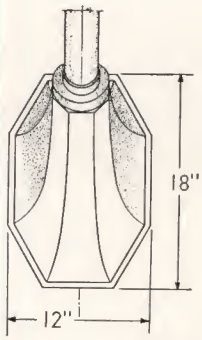
NOTE 1: Recommended Base Styles are B-15, B-15A, B-16, B-16A, B-18 or B-22 (see page 35).
NOTE 2: Recommended Base Styles are B-12, B-12A, B-17, B-19, B-23 (see page 37) or B-20 and B-22 (see page 35).

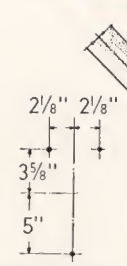


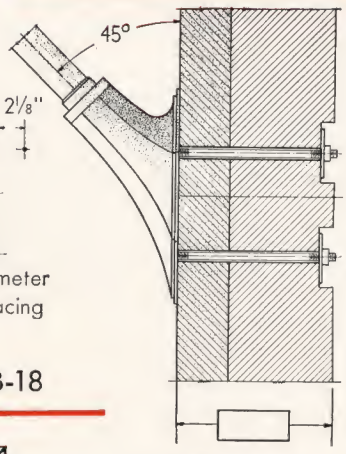
Pipe ferrule, washer plate, lockwasher, and nut furnished with each bolt



BASE STYLE B-15A (if plain)
OR B-15 (if ornamented)



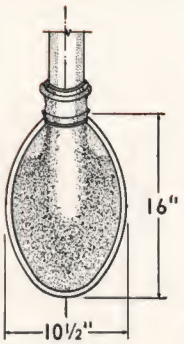


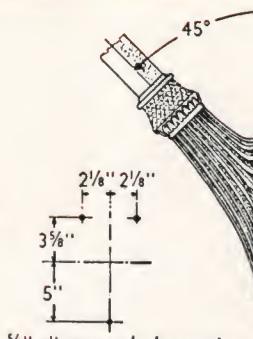


Pipe ferrule, washer plate, lockwasher, and nut furnished with each bolt

BASE STYLE B-18

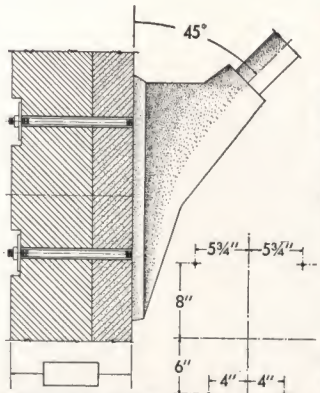
NOTE: BASE STYLES B-15, B-15A, B-16, B-16A, AND B-18 ARE FOR POLE BUTT DIAMETERS UP TO 3½-IN. MAXIMUM.





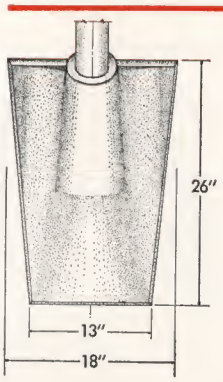
BASE STYLE B-16A (if plain)
OR B-16 (if ornamented)

NOTE: BASE STYLES B-20 AND B-22 BELOW ARE FOR POLE BUTT DIAMETERS UP TO 4-IN. MAXIMUM

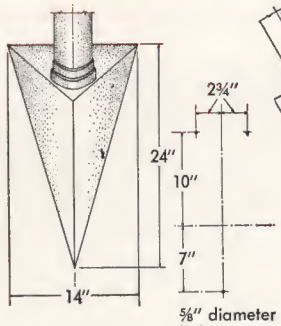


Pipe ferrule, washer plate, lockwasher, and nut furnished with each bolt

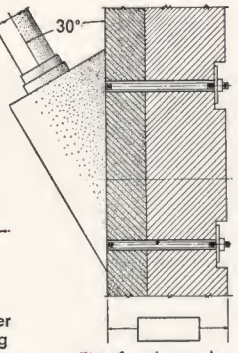
⅝" diameter bolt spacing



BASE STYLE B-20



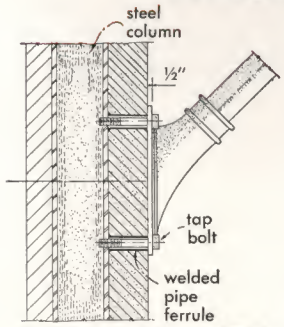
⅝" diameter bolt spacing

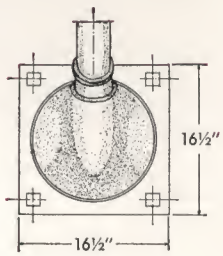


Pipe ferrule, washer plate, lockwasher, and nut furnished with each bolt

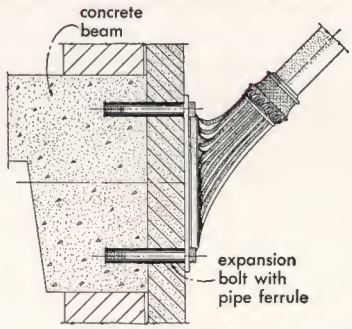
BASE STYLE B-22

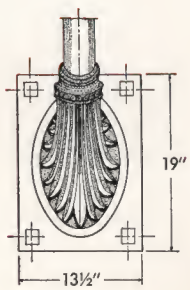
TYPICAL MOUNTING PLATES FOR OUTRIGGER BASES





B-15A BASE WITH MOUNTING PLATE





B-16 BASE WITH MOUNTING PLATE

OUTRIGGER *flagpoles*

description of brace arrangements

Three different designs of bracing are available for braced outrigger flagpoles, as detailed on Page 37. All three designs are of the dual-brace type providing greater rigidity than a single support brace. For proper appearance, the bracing design recommended depends upon the particular base style selected. Notes 4, 5, and 6, under table of dimensions below, indicate our recommendations.

Braces when used on outrigger flagpoles are a functional part of the pole support and the brace anchors must be through-bolted in wall. Brace anchors of the cinch or expansion bolted types are not recommended.

Where bases of braced flagpoles cannot be anchored with through-bolts fastened to base from rear of wall, the base can be attached to a supplemental standard mounting plate (of same metal as base) on outside face of wall and the four anchor bolts of the mounting plate can be passed into wall from the outside (see text on page 34 and typical details in lower portion of Page 35).

dimensions—for flagpoles, 16 to 23 feet, with braces (for specifications, see page 38)

Standard Length — Feet	Pole Type and Metal	Butt Dia. — Inches	Top Dia. — Inches	Wall Thickness —Inches	Tapered Portion — Feet	Cylindrical Butt Portion — Feet	Recommended Base Styles	Type Base Metal
16	Standard Type Aluminum	4½	2⅞	.188	9	7	See Note 1	Aluminum
18	Standard Type Aluminum	4½	2⅞	.188	9	9	See Note 1	Aluminum
20	Standard Type Aluminum	4½	2⅞	.188	9	11	See Note 1	Aluminum
23	Standard Type Aluminum	5	3¼	.188	9⅔	13⅓	See Note 1	Aluminum
16	Light Duty Steel	4	2⅞	.134	11	5	See Note 2	Bronze
18	Light Duty Steel	4	2⅞	.134	11	7	See Note 2	Bronze
20	Light Duty Steel	4	2⅞	.134	11	9	See Note 2	Bronze
16	Standard Stainless Steel	3½	2	.216	10	6	See Note 3	Monel-S
18	Standard Stainless Steel	3½	2	.216	11½	6½	See Note 3	Monel-S
20	Standard Stainless Steel	3½	2	.216	13	7	See Note 3	Monel-S
16	Standard Bronze	3½	2	.216	10	6	See Note 3	Bronze
18	Standard Bronze	3½	2	.216	11½	6½	See Note 3	Bronze
20	Standard Bronze	3½	2	.216	13	7	See Note 3	Bronze

NOTE 1: Recommended Base Styles are B-12, B-12A, B-17, B-19 or B-23 (see page 37).

NOTE 2: Recommended Base Styles are B-12, B-12A, B-17, B-19 or B-23 (see page 37). Base Styles B-20 or B-22 may also be used if desired (see page 35).

NOTE 3: Recommended Base Styles are B-12, B-12A, B-17, B-19 or B-23 (see page 37). Base Styles B-15, B-15A, B-16, B-16A, B-18, B-20 or B-22 may also be used if desired (see page 35).

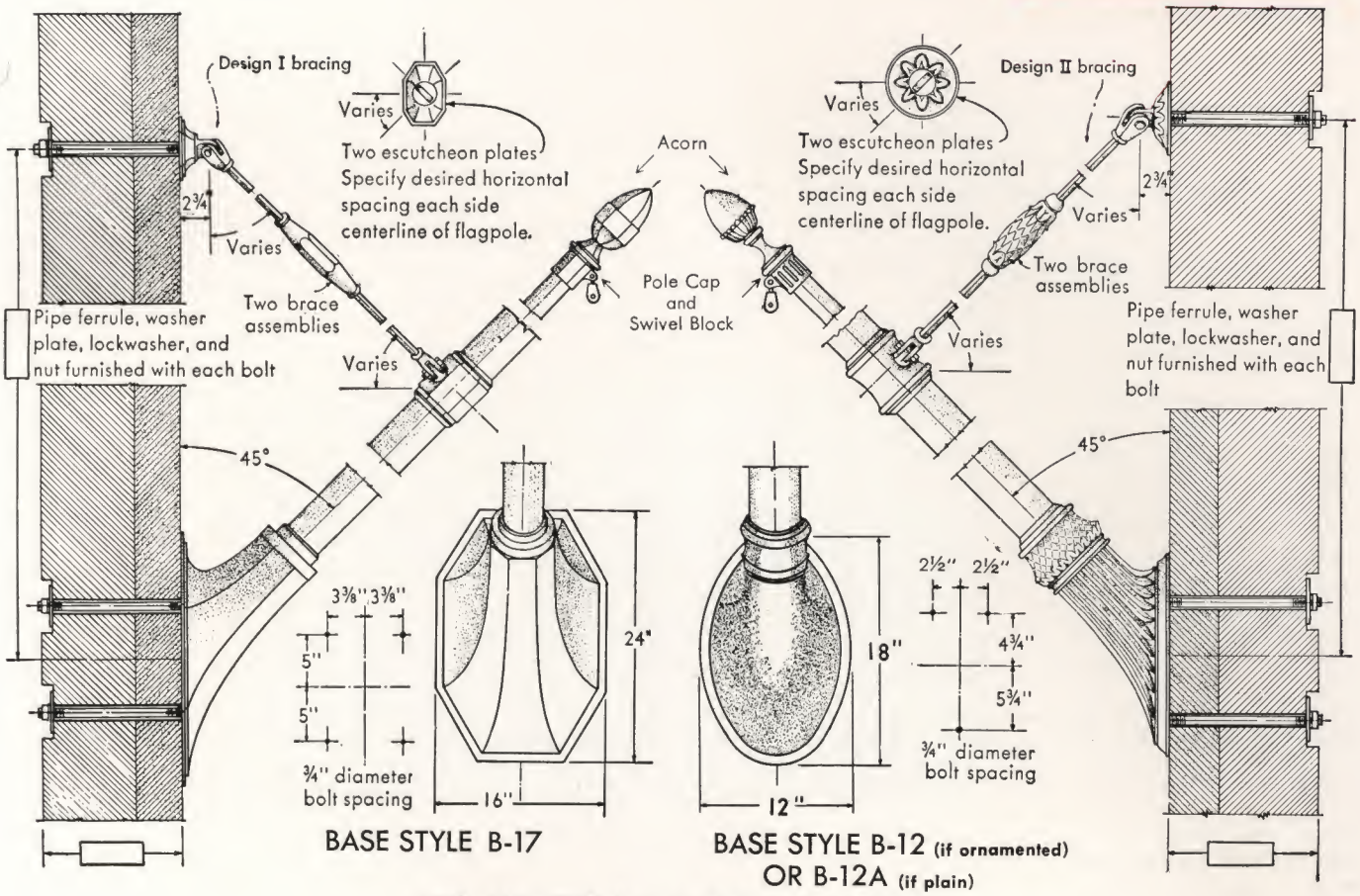
NOTE 4: Design I bracing is recommended for braced poles having Base Style B-17, B-18, B-19 or B-22.

NOTE 5: Design II bracing is recommended for braced poles having Base Styles B-12, B-15 or B-16.

NOTE 6: Design III bracing is recommended for braced poles having Base Styles B-12A, B-15A, B-16A, B-20 or B-23

One of two 20-ft. Aluminum Flagpoles with B-17 Bases
Transportation Building
Brooklyn, New York
Architect: New York City Transit Authority

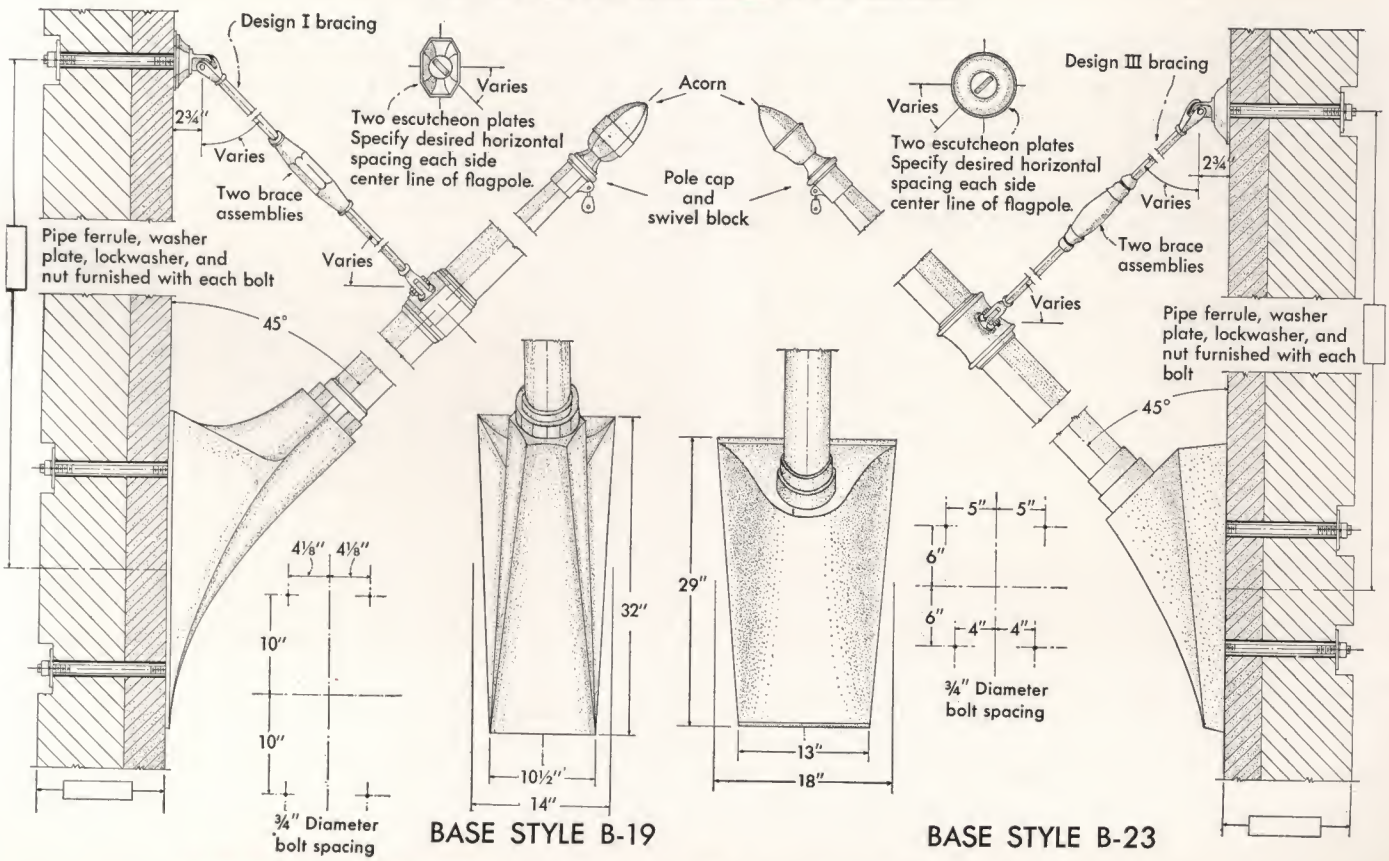
16-ft. Aluminum Flagpole with B-12A Base
Penn A.C. Building
Philadelphia, Pa.
Architect: General Services Administration



BASE STYLE B-17

BASE STYLE B-12 **(if ornamented)**
OR B-12A **(if plain)**

NOTE: BASE STYLES B-12, B-12A, B-17, B-19 AND B-23 ARE FOR POLE BUTT DIAMETERS UP TO 5-IN. MAXIMUM.



BASE STYLE B-19

BASE STYLE B-23

UNBRACED *flagpoles*

specifications

Furnish and erect a (Cone Tapered Standard Type Aluminum) (Cone Tapered Light Duty Steel) (Genuine Venetian Entasis Tapered Standard Stainless Steel) (Genuine Venetian Entasis Tapered Standard Bronze) outrigger flagpole made by "A" Division of John E. Lingo & Son, Inc., Camden, New Jersey. Flagpole shall be . . . . feet long with outside butt diameter of . . . . inches tapering through upper . . . . feet to an outside top diameter of . . . . inches with . . . . inches minimum wall thickness throughout. Pole shall have a smooth uninterrupted exterior surface throughout without visible joints or offsets.

If Pole is Aluminum Add The Following: The fittings shall consist of standard aluminum acorn top (Alternate: 5" spun aluminum flush seam ball), aluminum pole cap, chrome plated bronze swivel block, aluminum cleat, one 5/16-in. #10 cotton rope halyard, aluminum swivel snaps and one standard cast aluminum outrigger base (B-12) (B-12A) (B-15) (B-15A) (B-16) (B-16A) (B-17) (B-18) (B-19) (B-20) (B-22) (B-23) with duralumin anchor bolts, etc. Pole and all exposed aluminum parts shall have a centerless 80-grit satin finish, waxed, not painted. Before shipment, pole shall be spirally wrapped with heavy paper, covered with burlap, wood-stripped and steel-banded for protection during transit.

If Pole is Steel Add The Following: All fittings shall be bronze except halyards and shall consist of standard acorn top (Alternate: 5" gold leafed copper flush seam ball), pole cap, swivel block, cleat, one 5/16-in. #10 cotton rope halyard, swivel snaps and one standard outrigger base (B-12) (B-12A) (B-15) (B-15A) (B-16) (B-16A) (B-17) (B-18) (B-19) (B-20) (B-22) (B-23) with bronze anchor bolts, etc. Pole shall be painted one exterior and interior shop coat of red lead and oil before shipment. All bronze work shall have standard brush finish, clear lacquered.

If Pole is Stainless Steel Add The Following: Fittings shall consist of one standard acorn top made of Monel-S metal (Alternate: 5" spun stainless steel flush seam ball), one standard pole cap made of Monel-S metal, one chrome plated bronze swivel bock, one cleat made of Monel-S metal, one 5/16-in. #10 cotton rope halyard with two chrome plated bronze swivel snaps and one standard outrigger base (B-12) (B-12A) (B-15) (B-15A) (B-16) (B-16A) (B-17) (B-18) (B-19) (B-20) (B-22) (B-23) made of Monel-S metal, with stainless steel anchor bolts, etc. All stainless steel and Monel-S material shall have #4 finish.

If Pole is Bronze Add The Following: All fittings shall be bronze except halyards and shall consist of standard acorn top (Alternate: 5" gold leafed copper flush seam ball), pole cap, swivel block, cleat, one 5/16-in. #10 cotton rope halyard, swivel snaps and one standard outrigger base (B-12) (B-12A) (B-15) (B-15A) (B-16) (B-16A) (B-17) (B-18) (B-19) (B-20) (B-22) (B-23) with bronze anchor bolts, etc. Pole and bronze parts shall have standard brush finish, clear lacquered.

BRACED *flagpoles*

specifications

Furnish and erect a (Cone Tapered Standard Type Aluminum) (Cone Tapered Light Duty Steel) (Genuine Venetian Entasis Tapered Standard Stainless Steel) (Genuine Venetian Entasis Tapered Standard Bronze) outrigger flagpole made by "A" Division of John E. Lingo & Son, Inc., Camden, New Jersey. Flagpole shall be . . . . feet long with outside butt diameter of . . . . inches tapering through upper . . . . feet to an outside top diameter of . . . . inches with . . . . inches minimum wall thickness throughout. Pole shall have a smooth uninterrupted exterior surface throughout without visible joints or offsets.

If Pole is Aluminum Add The Following: The fittings shall consist of standard aluminum acorn top (Alternate: 5" spun aluminum flush seam ball), aluminum pole cap, chrome plated bronze swivel block, aluminum cleat, one 5/16-in. #10 cotton rope halyard, aluminum swivel snaps and one standard cast aluminum outrigger base (B-12) (B-12A) (B-17) (B-19) (B-23) with duralumin anchor bolts, etc. Brace arrangement shall be Design (I) (II) (III) with duralumin rod braces, aluminum brace collar, couplers, escutcheon plates, etc. including duralumin brace anchor bolts, etc. Pole and all exposed aluminum parts shall have a centerless 80-grit satin finish, waxed, not painted. Before shipment, pole shall be spirally wrapped with heavy paper, covered with burlap, wood-striped and steel-banded for protection during transit.

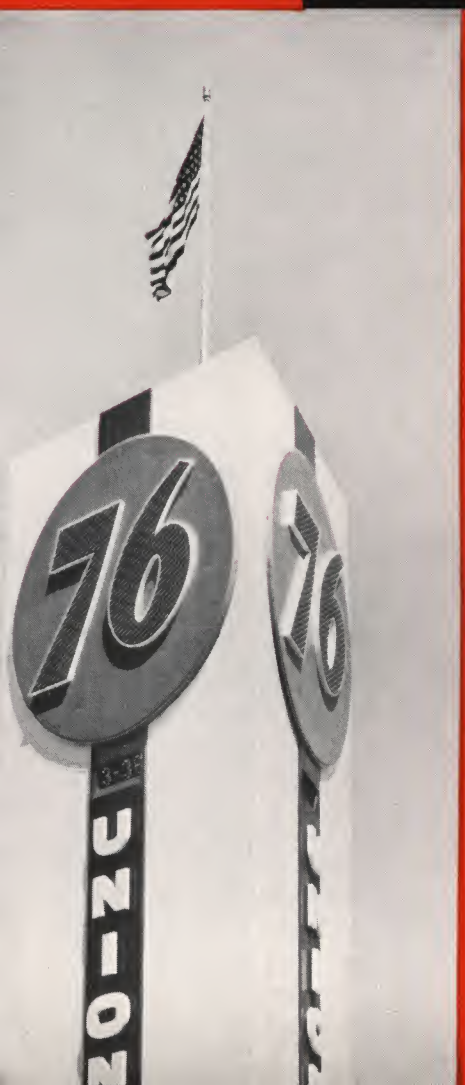
If Pole is Steel Add The Following: All fittings shall be bronze except halyards and shall consist of standard acorn top (Alternate: 5" gold leafed copper flush seam ball), pole cap, swivel block, cleat, one 5/16-in. #10 cotton rope halyard, swivel snaps and one standard outrigger base (B-12) (B-12A) (B-17) (B-19) (B-22) (B-23) with bronze anchor bolts, etc. Brace arrangement shall be Design (I) (II) (III) with bronze rod braces, bronze brace collar, couplers, escutcheon plates, etc. including bronze brace anchor bolts, etc. Pole shall be painted one exterior and interior shop coat of red lead and oil before shipment. All bronze work shall have standard brush finish, clear lacquered.

If Pole is Stainless Steel Add The Following: Fittings shall consist of one standard acorn top made of Monel-S metal (Alternate: 5" spun stainless steel flush seam ball), one standard pole cap made of Monel-S metal, one chrome plated bronze swivel block, one cleat made of Monel-S metal, one 5/16-in. #10 cotton rope halyard with two chrome plated bronze swivel snaps and one standard outrigger base (B-12) (B-12A) (B-15) (B-15A) (B-16) (B-16A) (B-17) (B-18) (B-19) (B-20) (B-22) (B-23) made of Monel-S metal, with stainless anchor bolts, etc. Brace arrangement shall be Design (I) (II) (III) with brace collar, couplers, escutcheon plates, etc. made of Monel-S metal and brace rods made of stainless steel, including stainless steel brace anchor bolts, etc. All stainless steel and Monel-S material shall have #4 finish.

If Pole is Bronze Add The Following: All fittings shall be bronze except halyards and shall consist of standard acorn top (Alternate: 5" gold leafed copper flush seam ball), pole cap, swivel block, cleat, one 5/16-in. #10 cotton rope halyard, swivel snaps and one standard outrigger base (B-12) (B-12A) (B-15) (B-15A) (B-16) (B-16A) (B-17) (B-18) (B-19) (B-20) (B-22) (B-23) with bronze anchor bolts, etc. Brace arrangement shall be Design (I) (II) (III) with bronze rod braces, bronze brace collar, couplers, escutcheon plates, etc. including bronze brace anchor bolts, etc. Pole and all bronze parts shall have standard brush finish, clear lacquered.

section 4

LINGO
ROOF SET
flagpoles



60-ft. Cone Tapered Standard Type Aluminum Flagpole atop tower of Union Oil Building, San Francisco, California
Architect: Ralph N. Kerr

CONE TAPERED STEEL

SWAGED SECTIONAL STEEL

CONE TAPERED ALUMINUM

Flagpoles for roof setting are furnished in Cone Tapered steel, Swaged Sectional steel and Cone Tapered aluminum constructions. For dimensions, typical anchorage details and specifications, please see pages 40 and 41. Steel poles up to 50 feet in overall length and aluminum poles up to 55 feet in overall length may be supported by braces or may be anchored through roof without braces; steel poles over 50 feet exposed height and aluminum poles over 55 feet exposed height should not be supported by braces but should be anchored through roof to floor construction below roof.

dimensions for swaged steel flagpoles

Exposed height, ft.	Outside Diameter, In.			Pole Weight, lbs.	Sections		
	Butt	Top	Ball		Total in pole	Shipping	
						Truck	Rail
HEAVY TYPE							
15	3½	2⅜	4	104	3	1	1
20	4	2⅞	5	170	3	1	1
25	4½	2⅞	5	255	4	1	2
30	5	2⅞	6	345	5	1	2
35	5	2⅞	6	413	5	2	2
40	5⅝	2⅞	6	535	6	2	2
45	5⅝	2⅞	8	597	6	2	2
50	6⅝	2⅞	8	782	7	2	3
60	7⅝	2⅞	8	1037	8	3	4
70	8⅝	2⅞	8	1367	9	3	3
75	9⅝	2⅞	10	1667	10	4	3
EXTRA HEAVY TYPE							
25	5	3½	5	312	4	1	2
30	5⅝	3½	6	415	5	1	2
35	6⅝	3½	8	551	6	2	2
40	7⅝	3½	8	810	7	2	2
45	7⅝	3½	8	889	7	2	2
50	8⅝	3½	8	1133	8	2	3
55	9⅝	3½	8	1448	9	2	2
60	10¾	3½	10	1793	10	3	2
65	10¾	3½	10	1921	10	3	2
70	11¾	4	10	2385	10	3	3
75	12¾	4	12	2706	11	3	3

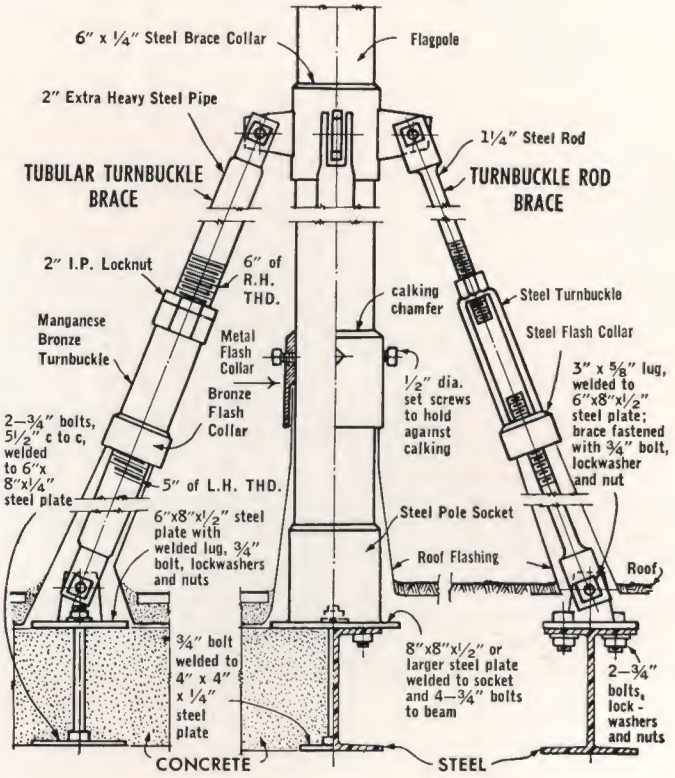
dimensions for cone tapered steel flagpoles

Exposed Height —ft.	Outside Diameter —inches			Pole Weight —lbs.	Tapered Portion —ft.	Tapered Wall —in.	Cylindrical Butt —ft.	Cylindrical Wall —in.	Weight extra butt per ft.—lbs.
	Butt	Top	Ball						
HEAVY TYPE									
25	5	3¼	5	335	12½	.250	12½	.247	12.5
30	5	3¼	6	410	12½	.250	17½	.247	12.5
35	5⅝	3¼	6	575	16½	.250	18½	.258	14.6
40	6	3¼	6	675	19½	.250	20½	.250	15.5
50	6⅝	3¼	8	930	24	.250	26	.280	19.0
60	7⅝	3¼	8	1275	31¼	.250	28¾	.301	23.5
70	8⅝	3¼	8	1900	38½	.250	31½	.322	28.6
75	9⅝	3¼	10	2150	45¼	.250	29¾	.342	33.9
STANDARD TYPE									
20	5	3¼	5	265	12½	.250	7½	.247	12.5
25	5⅝	3¼	6	355	16½	.250	8½	.258	14.6
30	6	3¼	6	450	19½	.250	10½	.250	15.5
35	6⅝	3¼	6	590	24	.250	11	.280	19.0
40	7⅝	3¼	8	730	31¼	.250	8¾	.301	23.5
50	8⅝	3¼	8	1040	38½	.250	11½	.322	28.6
60	10¾	3¼	10	1575	53½	.250	6½	.365	40.7
70	11¾	3¼	10	2000	60½	.250	9½	.375	45.6
75	12¾	4	12	2390	62½	.250	12½	.375	49.6
SUPERSTANDARD TYPE									
30	6⅝	3¼	6	490	24	.250	6	.280	19.0
35	7⅝	3½	8	640	29½	.250	5½	.301	23.5
40	8⅝	4	8	860	33	.250	7	.322	28.6
45	9⅝	4½	8	1090	36½	.250	8½	.342	33.9
50	10¾	5	10	1355	41	.250	9	.365	40.7
60	11¾	5½	10	1895	44½	.250	15½	.375	45.6
65	12¾	5½	12	2260	51¾	.250	13¼	.375	49.6
70	14	5½	12	2680	60¾	.250	9¼	.500	72.0
75	14	5½	14	3040	60¾	.250	14¼	.500	72.0

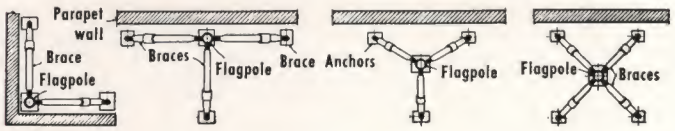
dimensions for cone tapered aluminum flagpoles

Total length, feet	Diameter, in.			Bare Pole weight, lbs.	Wall thickness, in.	Tapered portion	Cylindrical butt portion
	Butt	Top	Ball				
STANDARD TYPE							
23	5	3¼	5	80	.188	9′ 8″	13′ 4″
28	5½	3½	6	110	.188	11′ 0″	17′ 0″
33	6	3½	6	140	.188	13′ 9″	19′ 3″
38½	7	3½	6	200	.188	19′ 3″	19′ 3″
44	8	3½	8	250	.188	24′ 9″	19′ 3″
55	10	4	10	385	.188	33′ 0″	22′ 0″
65	12	5	12	665	.188x.250	38′ 6″	26′ 6″
77	12	5	12	840	.188x.250	38′ 6″	38′ 6″

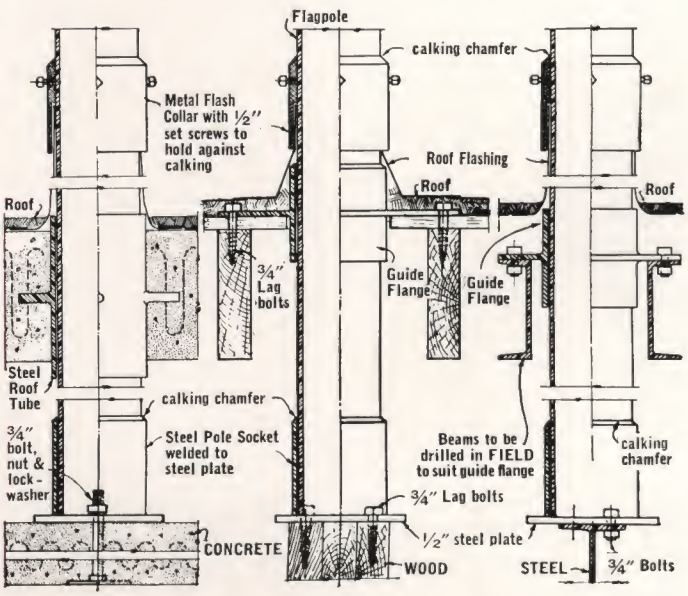
typical details of flagpoles above roofs



plan views showing typical brace arrangements



typical detail of flagpoles passing through roofs without braces



specifications for swaged sectional and cone tapered steel flagpoles (up to 50 feet) with braces

Swaged Sectional Steel Flagpole—Furnish and erect, where shown on plans, a hydraulic bell-die swaged sectional steel flagpole, complete with all fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, N. J. Flagpole to be roof set (Heavy Type) (Extra Heavy Type) . . . . feet exposed height above roof. Outside butt diameter of pole shall be . . . . inches and outside top diameter of pole shall be . . . . inches. The pole shall be made in . . . . sections and shipped in . . . . pieces. **Flagpole Construction**—(Please copy similarly titled specification paragraph from page 10.) **Note:** Continue specifications for fittings, etc. in applicable paragraphs below.

Cone Tapered Steel Flagpole—Furnish and erect, where shown on plans, a cone tapered steel flagpole, complete with all fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, N. J. Flagpole to be roof set (Heavy Type) (Standard Type) (Super-standard Type) . . . . feet exposed height above roof; outside butt diameter to be . . . . inches, tapered portion to be . . . . feet and outside top diameter to be . . . . inches. **Flagpole Construction**—(Please copy similarly titled specification paragraph from page 8.)

Flagpole Fittings—(Please copy specification paragraphs from page 26 for ball, truck, cleats, halyards and swivel snaps.)

Flash Collar—Provide cast bronze flash collar, place on flagpole at proper height and calk to pole, metal to metal, after roof flashing has been installed by roofing contractor.

Pole Socket With Plate—Provide a fabricated steel external pole socket, welded to steel rest plate of proper size to suit flagpole and anchored with suitable bolt arrangement.

Braces—(See note below before specifying number and type)—Provide . . . . (indicate quantity) (2″ extra heavy tubular turnbuckle) (1¼″ turnbuckle rod) braces, complete with steel brace collar and steel brace anchors. Braces shall be made of steel of lengths and number as shown on plans. Necessary drilling of (steel) (wood) beams (or placing of anchors in concrete) shall be located in accordance with detailed drawings to be submitted by Acme Flagpole Division of John E. Lingo & Son, Inc., to the Architect for approval.

Painting—(Please copy similarly titled specification paragraph from page 8.)

Note: 2″ extra heavy tubular turnbuckle braces are the best for bracing roof set poles up to 50 feet but the less costly 1¼″ turnbuckle rod braces are completely satisfactory for shorter poles under certain conditions. The use of 1¼″ rod braces is limited to the following maximum pole heights: L brace arrangement 20 feet; T arrangement 25 feet; Y arrangement 35 feet and X arrangement 40 feet. The 2″ extra heavy tubular braces may be used up to the following pole heights: L brace arrangement 25 feet; T arrangement 35 feet; Y arrangement 45 feet and X arrangement 50 feet.

specifications for cone tapered aluminum flagpoles (up to 55 feet) with braces

Flagpole—Furnish and erect, where shown on plans, a cone tapered aluminum flagpole, complete with all standard fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, N. J. Flagpole to be roof set, Standard Type, ... feet exposed height above roof; outside butt diameter to be . . . . inches, the tapered portion to be . . . . feet . . . . inches and the outside top diameter to be . . . . inches.

Flagpole Construction—(Please copy similarly titled specification paragraph from page 14.)

Flagpole Fitting—(Please copy specification paragraphs from page 14 for ball, truck, cleats, halyards and swivel snaps.)

Flash Collar—Provide a cast aluminum flash collar, place on flagpole at proper height and hold in place by means of at least four ½-in. galvanized steel set screws. Top of flash collar to have recess for waterproof calking to pole after roof flashing has been installed by roofing contractor.

Pole Socket With Plate—Provide a fabricated steel external pole socket, welded to steel rest plate of proper size to suit flagpole and anchor with suitable bolt arrangement. Entire assembly shall be hot dipped galvanized after fabrication.

Braces—(See note below before specifying number and type)—Provide . . . . (indicate quantity) (1¼″ turnbuckle rod) (2″ extra heavy tubular turnbuckle) braces, complete with steel brace collar, steel brace anchors, etc., all hot dipped galvanized. Brace collar shall have four ½-in. galvanized steel set screws for securing to pole.

Note: The 1¼-in. steel turnbuckle rod braces are completely satisfactory for any of these aluminum poles except the 55 feet pole. L type bracing may be used for either the 23 ft. or 28 ft. poles; T type bracing for the 33½ ft. poles; Y type bracing for the 38½ ft. poles and X type bracing for the 44 ft. poles. X type bracing of the 2″ extra heavy tubular turnbuckle type should be used for the 55 feet poles.

specifications for swaged sectional and cone tapered steel flagpoles (up to 75 feet) without braces

Swaged Sectional Steel Flagpole—Furnish and erect, where shown on plans, a hydraulic bell-die swaged sectional steel flagpole, complete with all fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, N. J. Flagpole to be roof set (Heavy Type) (Extra Heavy Type) . . . . feet exposed height above roof plus . . . . feet to anchorage below roof. Outside butt diameter of pole shall be . . . . inches and outside top diameter of pole shall be . . . . inches. Pole shall be made in . . . . sections and shipped in . . . . pieces. (Note: Distance below roof to be at least 10% of exposed pole height above roof.) **Flagpole Construction**—(Please copy similarly titled specification paragraph from page 10.) **Note:** Continue specifications for fittings, etc. in applicable paragraphs below.

Cone Tapered Steel Flagpole—Furnish and erect, where shown on plans, a cone tapered steel flagpole, complete with all fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, N. J. Flagpole to be roof set (Heavy Type) (Standard Type) (Super-standard Type) . . . . feet exposed height above roof plus . . . . feet to anchorage below roof; outside butt diameter to be . . . . inches, tapered length to be . . . . feet and outside top diameter to be . . . . inches. **Note:** Distance below roof to be at least 10% of exposed pole height above roof.) **Flagpole Construction**—(Please copy similarly titled specification paragraph from page 8.)

Flagpole Fittings—(Please copy specification paragraphs from page 26 for ball, truck, cleats, halyards and swivel snaps.)

Flash Collar—Provide cast bronze flash collar, place on flagpole at proper height and calk to pole, metal to metal, after roof flashing has been installed by roofing contractor.

Pole Socket With Plate—Provide a fabricated steel external pole socket, welded to steel rest plate of proper size to suit flagpole and anchored with suitable bolt arrangement.

Roof Tube—(If concrete slab) **or Guide Flange** (if steel or wood roof)—Provide (roof tube) (guide flange) of proper size, fastened to roof construction and calked metal to metal before roof flashing has been installed by roofing contractor.

Painting—(Please copy similarly titled specification paragraph from page 8.)

specifications for cone tapered aluminum flagpoles (up to 77 feet) without braces

Flagpole—Furnish and erect, where shown on plans, a cone tapered aluminum flagpole, complete with all standard fittings, as listed below, made by "A" Division of John E. Lingo & Son, Inc., Camden, N. J. Flagpole to be roof set, Standard Type, ... feet exposed height above roof plus . . . . feet to anchorage below roof; outside butt diameter to be . . . . inches, the tapered portion . . . . feet . . . . inches and the outside top diameter . . . . inches. **Note:** Distance below roof should be at least 10% of exposed pole height above roof.

Flagpole Construction—(Please copy similarly titled specification paragraph from page 14.)

Flagpole Fittings—(Please copy specification paragraphs from page 14 for ball, truck, cleats, halyards and swivel snaps.)

Flash Collar—Provide a cast aluminum flash collar, place on flagpole at proper height and hold in place by means of at least four ½-in. galvanized steel set screws. Top of flash collar to have recess for waterproof calking to pole after roof flashing has been installed by roofing contractor.

Pole Socket With Plate—Provide a fabricated steel external pole socket, welded to steel rest plate of proper size to suit flagpole and anchor with suitable bolt arrangement. Entire assembly shall be hot dipped galvanized after fabrication.

Roof Tube (if concrete roof) **or Guide Flange** (if steel or wood roof)—Provide a galvanized fabricated steel (roof tube) (guide flange) of proper size, securely fastened to roof construction.

recommended flag sizes

The tables of dimensions below show the most appropriate standard flag sizes, from the standpoint of appearance, for various flagpoles. The indicated flags can be used in moderate wind and under good weather conditions. However, the flag will be subject to less damage and provide longer service if it is not flown in high wind or in inclement weather. If it is necessary to fly a flag each day, regardless of weather conditions, then we recommend the initial purchase of a second flag, having much smaller standard dimensions, to be used on the flagpole whenever high wind or bad weather conditions prevail.

flags for ground set poles

Exposed Pole Height	Flag Size
15′	3′ x 5′
20′ or 25′	4′ x 6′
30′ or 35′	5′ x 8′
40′ or 45′	6′ x 10′
50′, 55′ or 60′	8′ x 12′
65′ or 70′	9′ x 15′
80′ or 90′	10′ x 15′
100′	12′ x 18′

flags for roof set poles

Exposed Pole Length	Flag Size
15′	4′ x 6′
20′ to 30′	5′ x 8′
35′ or 40′	6′ x 10′
45′ to 50′	8′ x 12′
60′ to 65′	9′ x 15′
70′ to 75′	10′ x 15′

flags for vertical wall set poles

Exposed Pole Height above top of wall	Flag Size
12′ to 15′	4′ x 6′
16′ to 30′	5′ x 8′
35′ or 40′	6′ x 10′

flags for outrigger poles

Pole Length	Flag Size
8′	3′ x 5′
10′ to 12′	4′ x 6′
15′ to 16′	5′ x 8′
18′ to 23′	6′ x 10′

flagpole erection

Flagpoles are usually erected by using a truck crane with boom. Erection can also be accomplished by use of a gin pole with necessary rigging if suitable truck crane cannot be procured. The pole erection should be entrusted to experienced men preferably those engaged in the steel erection, rigging, heavy machinery moving or steeplejack trades.

Complete printed erection instructions, with diagrams, are supplied with each pole showing how the pole can be erected by either the crane or gin pole method. For swaged sectional flagpoles shipped in more than one piece, full directions are given as to field assembly, method of calking field joints and field alignment of sections, without the necessity of field welding. For tapered steel flagpoles shipped in more than one piece, complete instructions are indicated for field assembly, circumferential welding and grinding at field joint, etc. For tapered aluminum flagpoles shipped in more than one piece, similar directions are given for field assembly, without the necessity of field welding.

For ground set flagpoles having standard foundations, standard foundation drawings are also furnished showing recommended foundation dimensions and complete instructions for excavating, pouring of footing, setting of foundation tube, pouring of main foundation, wedging and aligning of pole in foundation tube, dry-sand packing between pole and foundation tube, waterproof calking at top of foundation, installing grout cap, etc. For ground set poles having special foundations, especially prepared shop drawings previously approved by the Architect are furnished giving all pertinent dimensions and details for guidance of the foundation contractor and pole erectors. For all outrigger, wall set or roof poles, similar special shop drawings are furnished showing layout of anchorages, etc. for field use of pole erectors.

flagpole maintenance

Maintenance of flagpoles consists principally of halyard rope replacement and preservation of pole surface.

The cost of halyard rope replacement can be greatly minimized if the halyard rope in the pole is replaced whenever showing sign of wear and before becoming broken. Replacement of unbroken rope can easily be made without the necessity of climbing the flagpole. Merely butt the end of the new rope to the end of the old rope, thread a fine wire or strand of jute twine through ropes at points approximately 1-in. from rope ends and continue the thread by tight circumferential wrapping between the 2-in. space, then cover the wrapped portion with a single layer of friction or adhesive tape. Extreme care should be exercised in hoisting the joined rope up the pole, over the sheave and down to the starting position.

Both manila and cotton rope as supplied with our flagpoles give excellent service but cotton rope having a bronze center can also be supplied, being stronger, more serviceable and difficult to cut. A locked cleat cover insures against tampering of the fastened rope at the cleat but does not prevent vandals or petty thieves from cutting the rope where it emerges from top of cleat cover. The use of sash chain or wire rope should be avoided because such metal halyard rope is destructive to the painted surface of a steel pole and defaces the fine finish of an aluminum, bronze or stainless steel pole. The halyard rope, regardless of type, should never be used as a means of hoisting a person aloft. Only a qualified workman with proper equipment should be allowed to climb a flagpole.

Our aluminum flagpoles have a centerless 80-grit satin finish, waxed. This allows the surface of the pole to acquire a uniform aluminum oxide film with a silver-gray mat finish most desirable for architectural effect and requiring no maintenance. Similarly, our bronze flagpoles have a standard brush finish, clear lacquered. This finish develops a natural patina of fine color having a distinct artistic value and requiring no maintenance. Our stainless steel flagpoles have a #4 standard polish finish, generally preferred for soft lustrous beauty. Usually the stainless steel surface requires no maintenance but in localities heavy laden with industrial smoke, etc. the finish may eventually become dull from soot or oil sludge deposits. This film can easily be removed and the surface restored to the original factory finish by wiping the surface with a cloth saturated with water and some other ordinary detergent.

Steel flagpoles require periodic painting maintenance for clean appearance and as a protection to the metal. The interval between repainting depends greatly upon the atmospheric conditions at the pole location. In relatively clean atmosphere the necessary painting is infrequent but in industrial areas annual repainting may be required. Repainting of steel poles should be done whenever the painted pole surface becomes dingy or rust spots are in evidence. Any rust spots should be wired-brushed to bare metal and then coated with red lead paint. When the red lead is dry, apply a coat of flat white lead paint to the spots, followed by a coat of finish white lead paint to the entire visible pole. The normal painting cycle is frequently shortened if the flag snaps in the halyard ropes are allowed to beat against the pole surface when the flag is not in use. Except when the flag is flying, the flag snaps of any flagpole should be lowered to the cleat location. Constant whipping of the halyard rope against the pole surface will eventually mar the finish and produces a monotonous noise. This condition can be eliminated by wrapping the halyard rope in a few long spiral turns around the pole when the flag is not on the pole. For seacoast locations the rust resistance value of the steel can be greatly increased if the steel pole is hot-dip galvanized at the factory before delivery and installation. The galvanizing is not essential at localities where salt atmosphere does not prevail.

LINGO RADIO PRODUCTS

RCA Superturnstile TV Transmitting Antenna
(Antenna and Pole Manufactured by Lingo)
Empire State Building, New York City

"B" Division is the radio products department of John E. Lingo & Son, Inc., specializing in the design and manufacture of steel tubular antenna supporting poles for various types of transmitting antennas. The Company has also manufactured guyed tubular steel vertical radiators up to nearly 600 feet high for AM broadcast service. The highest tubular steel vertical radiator in the world is the 576 feet Lingo radiator at the Government Radio Station, Lisbon, Portugal.

Lingo has been identified with radio since 1923 and has pioneered in the development of supporting poles and antennas for many types of radio service. We also serve leading American radio transmitter manufacturers by constructing to specifications TV transmitting antennas, communication antennas and supporting poles for same.

During World War II we designed and manufactured thousands of guyed heavy steel tubular portable antenna supporting poles for the U.S. Signal Corps and Air Force. These poles gave outstanding service in every clime and on all fronts from the Aleutians to New Guinea and from Greenland to North Africa. Many 350 feet high guyed masts were also furnished.

Many of the television transmitting antennas and poles at TV stations throughout the world have been manufactured by Lingo. The photograph shows the WRCA television antenna and pole (both made by Lingo) atop a structural steel tower on the Empire State Building, New York City.

Lingo radio products also include a standard line of trim, unguyed, self supporting tubular steel poles for ground setting up to 100 feet high, especially designed to accommodate TV receiving antennas or medium weight communication antennas. These sectional steel poles are equipped with steps to provide easy accessibility to the antenna and transmission line whenever repairs are necessary. We also manufacture free-standing tubular steel poles for supporting rotary beam communication antennas in amateur radio service. These poles can also be equipped with a special anchorage device which allows the entire pole to be readily rotated thus eliminating the necessity of a rotary mechanism at top.

In planning a building where a TV transmitting or communication antenna installation is contemplated on the roof, present your pole problem to us. Our engineering staff is prepared to serve you by designing the proper supporting pole to accommodate the loads imposed by the particular antenna to be installed and to meet local building code requirements as to wind and ice loads, allowable working stress on steel, etc.

WORLD WIDE INSTALLATIONS OF

LINGO *flagpoles*

American Battle Monuments, throughout World
The Shamrock, Houston, Texas
Arlington National Cemetery, Arlington, Va.
Home of Thomas Jefferson, Monticello, Va.
Eisenhower Museum, Abilene, Kans.
Eisenhower Dam, Massena, N. Y.
Truman Library, Independence, Mo.
Alfred E. Smith Memorial, New York, N. Y.
U. S. Steel Main Office Building, Pittsburgh, Pa.
Tennessee Valley Authority—Various Dams
Falcon Dam, Texas-Mexico
St. Lawrence Seaway, Massena, N. Y.
University of Alaska, Fairbanks, Alaska
Miami Stadium, Miami, Fla.
Delaware Memorial Bridge, Wilmington, Del.
Glass Center, Corning, N. Y.
Queen Elizabeth Power Station, Saskatoon, Sask.
Lions International Building, Chicago, Ill.
Miller Brewing Company Building, Milwaukee, Wisc.
House of Seagrams, New York, N. Y.
Alcoa Main Office Building, Pittsburgh, Pa.
Atomic Research Laboratory, Oak Ridge, Tenn.
American Airlines General Office Building, Tulsa, Okla.
Union Carbide Building, New York, N. Y.
Carnegie Institute, Pittsburgh, Pa.
First City National Bank, Houston, Texas
Ak-Sar-Ben Colesium, Omaha, Nebr.
Washington Post Building, Washington, D. C.
State Capitol, Richmond, Va.
Public Safety Building, Seattle, Wash.
Baseball Hall of Fame, Cooperstown, N. Y.
Agricultural Hall of Fame, Kansas City, Kans.
Farm Bureau Insurance Building, Columbus, Ohio
Pan-American Union, Washington, D. C.
Lewisohn Stadium, New York, N. Y.
Pentagon Building, Arlington, Va.
May Co. Department Stores, California
Various Public Schools in New York, N. Y. and Philadelphia, Pa.
Alcoa, Bell Telephone, Bethlehem Steel, Chrysler, Coca-Cola, Du Pont, Ford, G.E., General Motors, IBM, Kodak, National Biscuit, RCA, Sears, Statler and U.S. Steel Buildings in Various Cities
Field House & Stadium, Naval Academy, Annapolis, Md.
U.S. Missile Proving Grounds, White Sands, N. Mex.
U.S. Weather, Aircraft Warning and Nike Stations at Various Locations
U.S. Army, Navy, Marine Corps and National Guard Training Centers in Various Cities
U. S. Government Buildings, Washington, D. C.—White House, Apex, Archives, Capitol, Commerce, Congressional Library Annex, Federal Reserve, Internal Revenue, Justice, Labor, State (old and new), etc.

thousands of other installations including:

Airports	Colleges	Hotels	Parking Lots	Shopping Centers
American Legions	Commercial Bldgs.	Housing Projects	Parks	Stadiums
Apartment Houses	County Buildings	Industrial Plants	Playgrounds	State Buildings
Armories	Department Stores	Jails	Police Stations	Swimming Pools
Auditoriums	Detention Homes	Libraries	Post Offices	Trade Union Bldgs.
Banks	Embassies	Marinas	Public Buildings	Universities
Bridges	Fairgrounds	Medical Centers	Race Tracks	Veterans Hospitals
Bus Terminals	Fire Stations	Memorials	Railroad Terminals	VFW Buildings
Camps	Fraternal Buildings	Military Centers	Residences	War Memorials
Cemeteries	Garages	Monuments	Restaurants	Warehouses
Churches	Golf Courses	Municipal Bldgs.	Service Stations	Yacht Clubs
Coast Guard Stations	Gymnasiums	Office Buildings	Schools	Youth Centers

"A Study In Perspective"
Showing Two 50-ft. Standard Type
Cone Tapered Steel Flagpoles
Inland Steel Company Office Building
Chicago, Illinois
Architects: Skidmore, Owings and Merrill

Three 30-ft. Cone Tapered Standard
Type Aluminum Flagpoles
Republic National Bank,
Dallas, Texas
Architects: Harrison & Abramovitz; Gill & Harrell

"A" Division

JOHN E. LINGO & SON • INC.

28th STREET AND BUREN AVE. • CAMDEN 5, NEW JERSEY
TELEPHONE: WOodlawn 4-0487